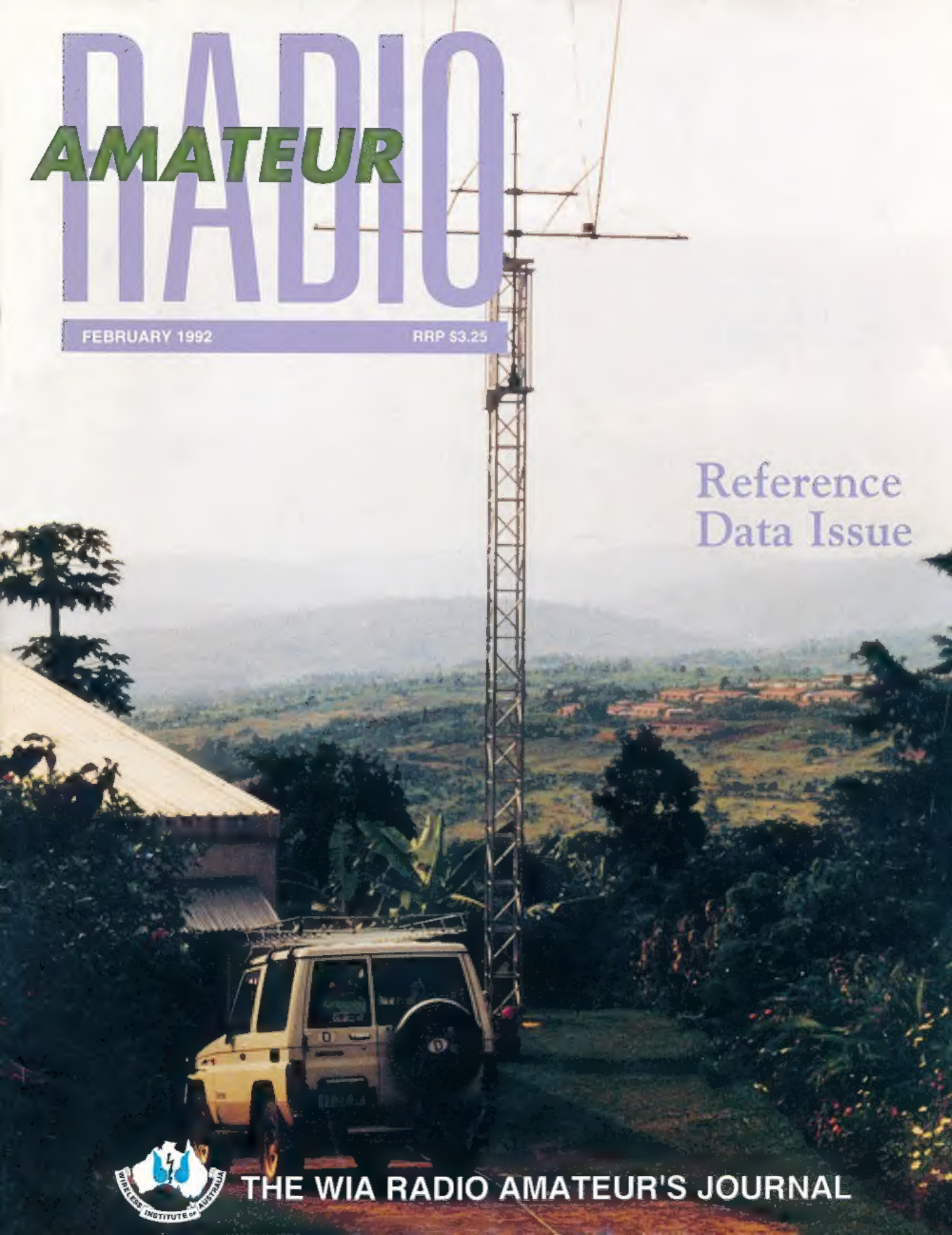
AMATEUR RADIO

FEBRUARY 1992 RRP $3.25

Reference Data Issue



THE WIA RADIO AMATEUR'S JOURNAL

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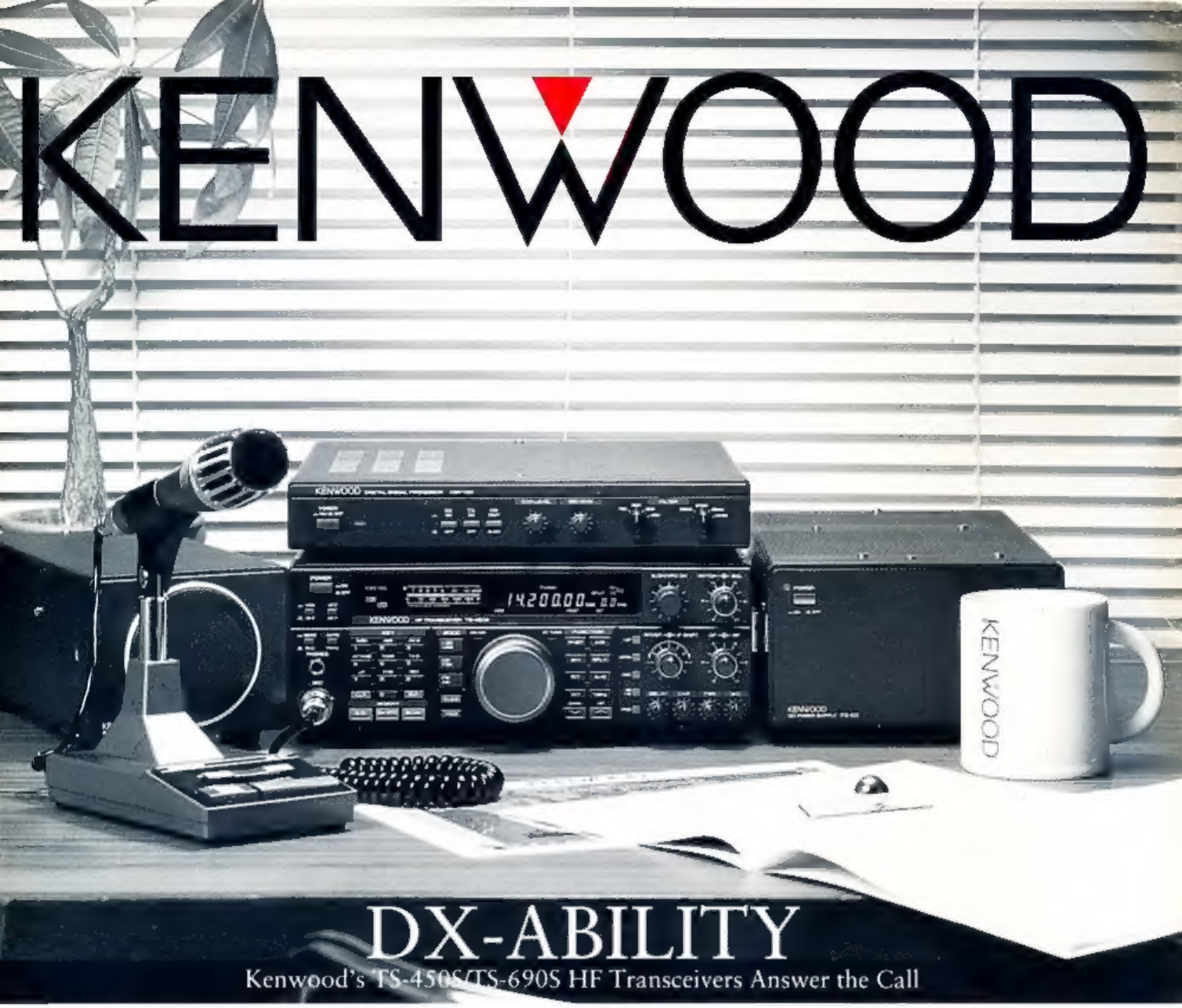

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AMATEUR RADIO

THE WIA RADIO AMATEUR'S JOURNAL

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Delivery of *AR:* If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA.

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Cover

The QTH of Hartmut 9X5HG near Kigali, Rwanda. Photo by courtesy of Stephen Pall VK2PS.

EDITOR'S COMMENT

BILL RICE VK3ABP EXECUTIVE EDITOR

Feedback

So far, I have received four written comments on my editorial last month (Lies, Damned Lies and ??). Two are from migrants (or at least visitors) which is itself an interesting statistic. The full quotation is "There are lies, damned lies, and then there are statistics". Colin N4SOI (giving a VK2 address) tells us who. Not Winston Churchill, but someone who occupied the same Prime Ministerial chair some 75 years earlier, Benjamin Disraeli. Thanks for the info, Colin!

The other migrant is VK4CGO (he didn't give his first name) who was a ZL and NZART member from about 1947 until moving to VK4 a few years ago. He and Owen VK2DMY were not happy with the theme that WIA membership is becoming cheaper in terms of inflated dollars (measured by CPI). The VK4 disliked but could not alter the political and economic trends he observed in ZL and now sees in VK, realising that they are probably world-wide. In fact, the only country still booming seems to be Japan; and that is only because of ingenuity and productivity demonstrably better than the rest of the world.

Unfortunately, Owen was even more unhappy, and described my efforts as "ill-considered, epitomising the elitist, bureaucratic and self-righteous attitude of the Executive of the WIA". He suggested that my personal background did not "reflect the average Australian amateur". He preferred "more logical and commercial values when assessing value for money". CPI is apparently not good enough. And, finally, he wanted to see more advertising in *AR*, thus reducing its cost to members.

Others may agree with Owen, so I have decided to comment here rather than in the limited space of a footnote in "Over to You". What is ill-considered in a statement of fact? Am I elitist because I have an indexed pension? We radio amateurs are one in every thousand of the population. Most of us have at least some background in electronics. Many of us (I guess between 30 and 50 percent) have tertiary qualifications. Collectively, are we not ourselves an elite?

What is a bureaucracy? Macquarie gives four definitions, which all add up to government by officials without responsibility. The WIA is not a government, but we do continuously negotiate with government bodies, which respond much more co-operatively to a well-organised representative body. Yes, we are representative, and mostly without being paid for it. Personally, I give about 25 or 30 hours of my time every month, plus over 300km of travelling, to the WIA, without one cent of payment. I joined the WIA in 1945 and was first licensed in 1947. I have been on Executive since 1983. Am I a bureaucrat? If I am self-righteous, have I no good reason for it? I guess I am not "the average Australian amateur". Most would not be so altruistic. My position as Executive Editor is open to anyone who feels they can do better.

More advertising in *AR* would permit a larger magazine or subscriptions being kept lower. No argument! But in the present economic climate advertisers are struggling to stay in business. Advertising must reach more customers to pay for itself.

Continued on page 16

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest National Radio Society — Founded 1910

Representing the Australian Amateur Radio Service — Member of the International Amateur Radio Union
Registered Executive Office of the WIA: 3/105 Hawthorn Road, Caulfield North, Vic 3161
All mail to: **PO Box 300, Caulfield South, Vic 3162.** Telephone: (03) 528 5962
Fax: (03) 523 8191
Business Hours: 9.30am to 3.00pm on weekdays
General Manager and Secretary: Bill Roper VK3ARZ

WIA NEWS

FROM THE WIA EXECUTIVE OFFICE

Spread Spectrum Transmissions

DoTC in Canberra recently advised the WIA they had received a request from one of their State offices for an interpretation of the requirements of RIB 71 para 39 with respect to spread spectrum transmissions.

Canberra advised the DoTC State office that spread spectrum transmissions are to be considered as wide band emissions and, as such, are governed by paragraph 39 of the RIB. This means that spread spectrum modulation is only permitted above 420 MHz.

This interpretation is agreed to by the WIA.

JOTA 1991

The report on the 34th Jamboree on the Air, held over the weekend of 19-20th October 1991, was received recently in the Executive Office. Once again the figures are impressive.

In Australia 653 stations operated, on behalf of 970 Scout groups and 913 Guide units, enabling a total of over 25,000 young participants to make over 10,000 contacts. Comparison with figures from recent years shows that despite all the other attractions available, amateur radio is still high on the interest list of these young people.

Surely JOTA must be one of amateur radio's best recruiting and public relation events.

Congratulations to JM1UXU

The Japanese Amateur Radio League recently reported that the 4th Class Order of the Sacred Treasure was conferred upon Masayoshi Fujioka, JM1UXU, Secretary of the IARU Region III, in recognition of his contributions towards telecommunications and his activity in WARCs and other ITU conferences.

Masayoshi was re-elected Secretary of IARU Region III for a further 3-year term at the IARU Conference in Bandung late last year.

Amateur Radio Delivery Problems

Amateur Radio magazine delivery to members is still suffering some minor problems. The mailing house machine is again occasionally inserting two address fly sheets in the one package.

A number of November issue deliveries were affected, and it seems that this fault recurred with some of the January 1992 issue. Once again, thank you to those

WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers		
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7008	President Secretary Treasurer	Christopher Davis Jan Burrell Ken Ray	VK1DO VK1BR VK1KEN
VK2	NSW Division 109 Wigram St Parramatta NSW (PO Box 1066) Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Secretary Treasurer (Office hours	Roger Henley Bob Lloyd-Jones Bob Taylor Mon-Fri 1100-1400 Wed 1900-2100)	VK2ZIG VK2YEL VK2AOE
VK3	Victorian Division 403 Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Secretary Treasurer Office hours 0830-1530 Tue & Thur	Jim Linton Barry Wilton Rob Halley	VK3PC VK3XV VK3OLZ
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President Secretary Treasurer	John Aarsse Bob Lees Eric Fittock	VK4QA VK4ER VK4NEF
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Rowland Bruce John McKellar Bill Wardrop	VK5OU VK5BJM VK5AWM
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 388 3888	President Secretary Treasurer	Cliff Baslin John Farnan Bruce Hedland-Thomas	VK6LZ VK6AFA VK6OO
VK7	Tasmanian Division 148 Derwent Ave Lindisfarne Tas 7015	President Secretary Treasurer	Tom Allen Ted Beard Peter King	VK7AL VK7EB VK7ZPK
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28MHz).			

Note: All times are local. All frequencies MHz.

Weekly News Broadcasts	1992 Fees	
3.570MHz 2m ch 6950 Rebroadcast Mondays 8pm 70cm ch 6525 2000 hrs Sun	(F) (G) (S) (X)	$70.00 $56.00 $42.00
From VK2WI at 1045 and 1915 on Sunday on the following frequencies and modes: (*1045 only): 1.845 AM; 3.595 AM morning and SSB evening; 7.146 AM*; 10.125 SSB; On relay 14.160 SSB* and 21.170 SSB; 28.320 SSB; 52.120 SSB; 52.525 FM; 144.120 SSB; 147.000 FM; 438.525 FM; On relay 584.750 ATV sound; 1281.750 FM. Plus automatic relays to 2m repeaters surrounding Sydney and manuels to several country repeaters. News headlines by phone (02) 552 5188	(F) (G) (S) (X)	$88.75 $53.40 $38.75
1.840MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon, 147.225 FM(R) Mt Baw Baw 146.800 FM(R) Mildura 146.700 FM (R) MT. Dandenong 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday	(F) (G) (S) (X)	$72.00 $56.00 $44.00
1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400, MHz 52.525 regional 2m repeaters and 1296. 100 0900 hrs Sunday Repeated on 3.605 & 147.150MHz, 1930 Monday	(F) (G) (S) (X)	$70.00 $56.00 $42.00
1820kHz 3.550MHz, 7.095, 14.175, 28.470, 53.100, 145.000, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555M 146.500, 0900 hrs Sunday	(F) (G) (S) (X)	$70.00 $56.00 $42.00
146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525MHz. Country relays 3582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R) 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker Broadcast repeated on 146.700 at 1900 hrs	(F) (G) (S) (X)	$60.75 $48.60 $32.75
146.700MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) (G) (S) (X)	$67.00 $53.65 $39.00

Membership Grades
Full (F) Pension (G)
Needy (G) Student (S)
Non receipt of AR (X)

Three-year membership available to (F) (G) (X) grades at fee x 3 times

members who have notified the Executive office of extra fly sheets received with their copy of the magazine, thus enabling us to forward magazines to those members who missed out.

Parliamentary Report on RF Spectrum

As previously reported, some months ago the WIA made a submission to the House of Representatives Standing Committee on Transport, Communications and Infrastructure concerned with their inquiry into Management of the Radio Frequency Spectrum. The Committee called for initial inputs from the community and, having digested those, together with verbal evidence, posed a long series of questions for further consideration and written response. The WIA also responded to that extensive question list.

The WIA received copies of the written submissions, 75 in all, together with transcripts of the verbal evidence and now the final report.

The Committee's Conclusions and Recommendations are extensive, however they may be summarised as follows:

Conclusions

Spectrum management objectives must be clearly defined, accurate and relevant. They must take into account the immediate demands and the potential for rapid changes in technology and service innovations in the future.

The objectives should not impede the achievement of the broader communications policy objectives of government.

The objectives should define spectrum management from an operational perspective with a view to maximising the availability of spectrum to all users for all purposes. The two significant objectives from an operational perspective are dynamic and technical efficiency.

The spectrum manager should continue to be responsible for ensuring observance of Australia's obligations with regard to the international planning process.

Recommendations

There are six spectrum management objectives: dynamic efficiency, technical efficiency, provision for public and merit goods (we amateurs fit in here), allocation to highest value uses, international agreements and an equitable system of charges.

With regard to charges, actual cost recovery is recommended with clear identification of any taxation component. A means of recovering economic rent of the spectrum should be formulated.

In fine tuning aspects of the current spectrum management system, DoTC audit of spectrum utilisation, by monitoring both of frequency bands and congested use locations, is recommended. This is to be associated with extensive data bases, termination of frequency registration certificates and private sector frequency coordination services.

It is recommended management be by a mixed market and administrative system and the tradeability of spectrum resources be introduced for commercial users. Non-commercial users should have the option to retain the current administrative system or convert to the tradeable one. Auditing of spectrum use for public sector users should be introduced and tradeable spectrum should not be perpetual but have a fixed term tenure like a lease.

How could this affect us as radio amateurs?

Firstly we need to become more efficient in using spectrum; perhaps our band planning needs to be more timely with unused spectrum from obsolescent modes recycled. This can be achieved by flexible multi-use or layered band plan allocations.

We should anticipate user pays cost recovery of management of our allocations and, coupled with that, more frequency coordination action on our part. Incidentally, that coordination must extend beyond our allocations for issues such as site compatibility.

Finally we must use our frequencies, for they are likely to be monitored for occupancy more frequently by automated means.

More on Harry

The 100th Birthday of Harry Angel VK4HA, was featured in an article in the December 1991 issue of Amateur Radio magazine. Harry's birthday attracted quite a lot of media attention in VK4, including the use of the cover of the December 1991 issue of our magazine on at least one television station, and interviews with Harry himself. Great publicity for amateur radio!

Radiocommunications and EMI/EMC Standards

The DoTC has requested input from the WIA towards establishment of Departmental standards policy, following a conference in Sydney in November. Two discussion papers *"New Approaches to Radiocommunications Standards Setting Policy"* and *"Electromagnetic Compatibility Standards"* were provided.

According to the DoTC these papers *"are intended to promote discussion on new policy approaches which could have a significant effect on radiocommunication services and wider industry. Given the potentially far-reaching effects of such standards, it will be necessary to have a clear view of the overall objectives that are to be achieved. The intention of this consultation process is to ensure that the outcome is a responsive and effective standards framework based upon an appropriate balance of statutory controls and self-regulatory arrangements to facilitate the effective operation of electronic communications systems, to encourage the development of new services and technologies, and to provide positive incentives for the most economically efficient uses of the radio frequency spectrum, to the social and economic benefit of the Australian community."*

The papers stress the need for Australia both to have input to establishment of international standards, and to conform to those standards for the sake of both manufacturers and consumers. They also suggest possible procedures for demonstration of compliance, auditing of performance, and phasing in of new regulations.

The WIA has long advocated the establishment of, and adherence to, standards, especially with regard to EMI/EMC. The papers have been circulated to a number of WIA representatives for their comments and preparation of a response to DoTC. Unfortunately, as often happens at this time of year, the response time is unrealistically brief - we received the letter on 8th January, and the deadline for responses is 30th January!

Channel 5A Problems

A note of concern from John Martin VK3ZJC, the WIA FTAC Chairman.

"I have recently noticed strong QRM on the lower end of the 2 metre band. This is due to an ABC TV translator 100 km away changing over to stereo sound. The second audio sub-carrier is on 143.990 MHz, and with 50 kHz deviation it extends well into the 2 metre band. This situation will become more serious as all ABC stations change over to stereo, and it will be particularly severe in areas such as Newcastle. I believe the 5A station there has a 25 kHz positive offset, therefore the second audio carrier is on 144.015 MHz. There will also be a parallel situation on 6 metres with Channel O stations radiating signals within our exclusive 52 - 54 MHz allocation.

I would appreciate any information from amateurs on

TV stereo interference. Amateurs living in Channel 5 areas may also be able to advise whether their local TV stations are radiating interference in the 108 MHz aircraft band."

Radio amateurs who wish to supply information should send it to John care of the Executive Office.

SEANET 1992

The Darwin Amateur Radio Club will be hosting the 20th Annual South East Asia Net Convention at the Beaufort Hotel in Darwin from 29th October to 1st November 1992. DARC will be arranging accommodation packages from five star quality downwards. Make a note in your diary now for the 29th October to the 1st November 1992. More details in future WIANEWS.

Improper Use of the Amateur Bands

Following discussion and a Resolution at the International Amateur Radio Union meeting in Bandung late last year, the IARU Administrative Council has produced a special issue of its Calendar to outline the IARU position on the growing problem of improper use of the amateur bands.

Most cases of improper use can be categorised as either - 1. *"Intruders"* operating contrary to the Table of Frequency Allocations and causing interference as a result;
2. Unlicensed stations; or
3. Satellites launched for non-amateur purposes but using Amateur Satellite allocations, or amateur satellites being used for non-amateur purposes.

The Calendar emphasises that the first step must always be to bring the offenders to the notice of the local administration, except perhaps where the interference is readily traced to a fault in the transmitter. In this case, the technical staff responsible for the transmitter may be contacted direct.

The IARU is not a police force, and has no authority to enforce agreements between nations on telecommunication matters. It can, however, help to *"educate"* administrations and encourage them to take corrective action. In a situation where complaints by a member-society cannot be resolved with the local administration, the regional IARU Monitoring Service coordinator may assist in approaching the administration.

The IARU Monitoring Service is a network of amateur stations who document the operation of unauthorised stations in our bands. There is always room for more interested amateurs to join this activity.

International Representation Fund

WARC 92 will convene in Torremolinos in Spain on 3rd February 1992, so by the time members read this, the WIA delegates, David Wardlaw and Ron Henderson, as members of the Australian Government team, will be on their way.

The preparations for this WARC have been prolonged and intense, as well as expensive. The WIA is very appreciative of those who have made donations to the International Representation Fund to help cover these expenses.

The fund is financed chiefly from membership fees ($2.00 per year of your subscriptions - $1.60 if you are a concessional member - goes to this fund) but it has been very pleasing to receive extra donations both from members and non-members.

WARC 92 is just one of many situations where the WIA is attending as the representative of all Australian amateurs, non-members as well as members, and presenting the case for retention or extension of privileges for the whole service.

Donations received since the last acknowledgment in this magazine include:-
Mackay AR Association
RAAF Williams ARC
Qantas ARC
R Cortis VK2XRC
D Rosenfield VK3ADM
G Muirhead VK4WEM
H Hoover W6ZH
R Huey VK2AHU
D Friend VK4OE
L Schmidt VK4JZ
R Harris VK5RR
G Percy VK5OR
R Tulloch VK4BF
Orange ARC
G Selwood VK2KJX
H O'Brien
D Clarke VK2K??
V Marsden VK2EVM
P Gammie VK2MHN
F Hoy
E Hicks VK2VOH

Although the expenses will reduce for a while after WARC 92, the fund will still be maintained as a separate budget item because international activities and needs are ongoing. Donations will continue to be welcome, and non-members donating to this fund can be assured that all such donations are committed to works for the benefit of all amateurs.

Celebratory Prefix for Finland

A recent fax received from the Finnish Amateur Radio League (SRAL) announced that the Finnish Telecommunication Centre has given all Finnish amateur radio operators permission to use the OG prefix, rather than the usual OH prefix, for the whole of 1992. This is to celebrate the 75th anniversary of Finnish independence.

A special award has been issued by SRAL. To obtain the *"Suomi 75 vuotta"* award you need contacts with 75 amateur radio stations. More details may be obtained from the SRAL Awards Manager, Mr Jukka Kovanen, Varuskunta Rak 47 as 11, SF-11310 Riihimakj, Suomi-Finland. ar

Australian Radio — The Technical Story, 1923-83

WINSTON T MUSCIO ISBN 0 949924 82 2. KANGAROO PRESS, SYDNEY, 1984

SUBJECT: TECHNICAL HISTORY OF RADIO BROADCAST EQUIPMENT IN AUSTRALIA

Winston joined STC in 1933 and stayed with that company till his retirement in 1980. He held senior engineering and management positions during the company's development of broadcast and commercial radio equipment, and during WW2 he was involved in military radio production. His book has detailed background and technical information on many of the radio transmitters and receivers build by AWA, STC and Philips.

There are chapters on broadcast receivers, broadcast transmitters, communications transmitters and receivers and mobile radio systems. In addition, he covers audio, recording and tape equipment. The emphasis is naturally on STC designs.

For amateurs, the STC AMR-300, AWA AMR-100 and Kingsley AR7 communications receivers are mentioned, as are military sets such as the WS Type 109, AT14 and AT20 etc. The author admits his effort is not a complete history, but, for the technical historian, it is a valuable reference.

Size is A5 and it comprises 244 pages, with several photos, circuit diagrams and charts. Original price was $32, and it is now about $20 in the second-hand bookshops. **Colin MacKinnon VK2DYM** ar

The Diamond Antenna

BEET WARD-COTTAGE NO 36 EVENTIDE HOME
CAMPBELL ST ROCKHAMPTON 4700

FOR THOSE NEEDING AN antenna for the HF bands to fit in a restricted space, maybe the "Diamond" offers the solution ...

This article was originally developed so that amateur radio operators could enjoy their hobby even though they lived in situations where it is not possible to erect the more conventional type of aerial.

Like quite a few "hams", I live in an "old crocks' home" and, in many cases, a proposal to use a sizeable radio aerial brings cries of protest and usually permission to erect one is refused. Thus, most of the amateurs are limited to 2m and/or 70cm.

The aerial is quite small in size and is, in the old imperial terms, approximately 2ft square and designed to fit onto the normal barge mount as used to mount TV antennas on the fascia board of a house, as the enclosed sketches will show. It can also be mounted on the front end of a caravan, taking up little space. It is so unobtrusive that little or no comment is aroused. For portable and emergency operations, a short mast about 12ft long is quite okay, so if your main aerial is damaged by wind etc, you can be back on the air within a very short time. At this QTH it can be erected in about 20 minutes.

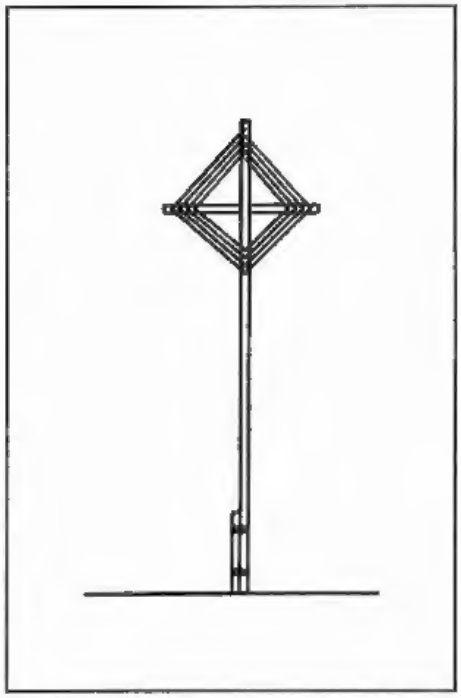
The cost to construct is quite reasonable, and should be around $20 to $25, including new wire (insulated is best).

The aerial uses a single wire feeder and should be coupled to the TX via an antenna tuner when an SWR of 1:1 can be expected.

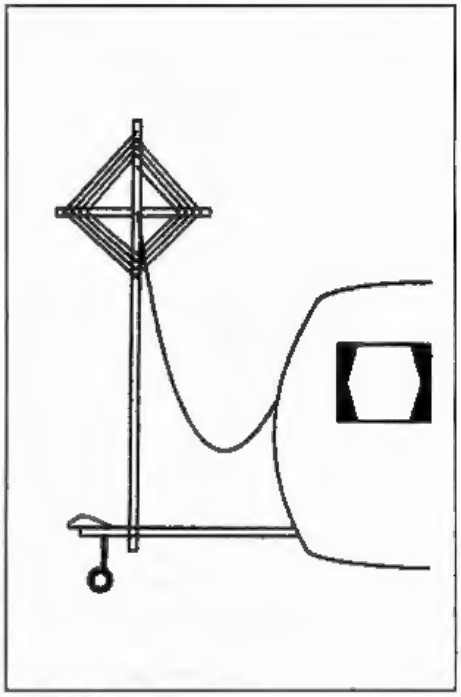
For the frame you will require 7½ feet of 1"-square timber; about four dozen non-ferrous nails with reasonable size heads each 3/4" long; and 75ft of insulated wire. One waterproof connector is needed to attach the feeder.

The winding is in the form of a spiral; not the more usual form of inductor. The feeder is connected to the end of the winding nearest to the centre of the cross, and the connector is mounted on the lower arm of the framework. I think the sketches will make all things fairly clear.

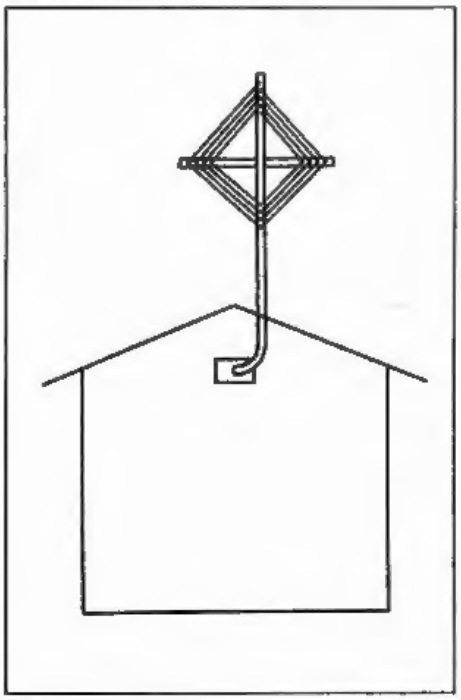
In the first model, the wire used was white figure 8 split down to make single



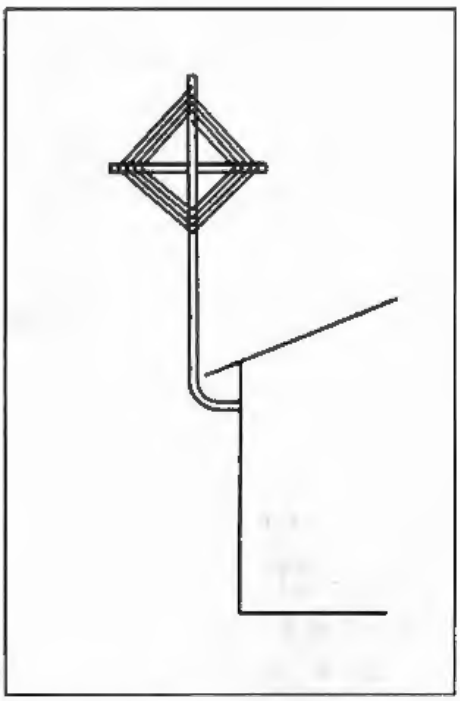
On short pole which is supported by 4ft piece of pipe etc driven about 12" into the ground.



Front end of caravan.



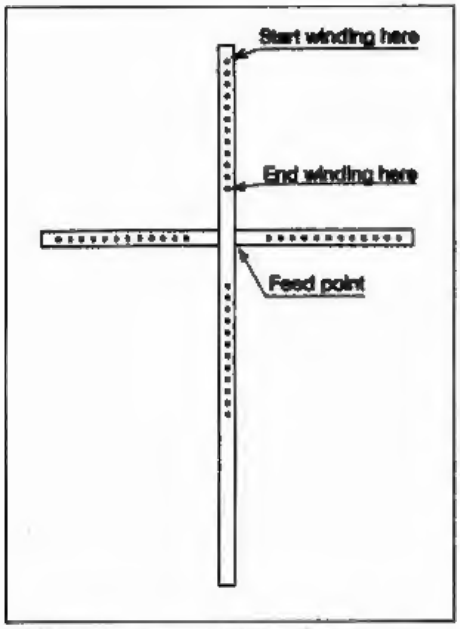
This is a good position.



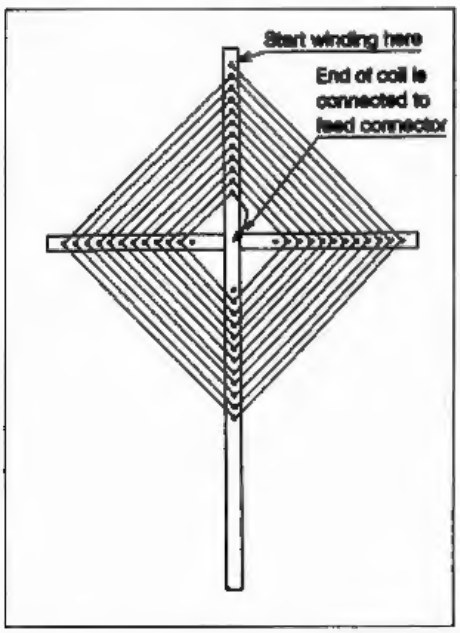
This is okay, but roofing tends to affect radiation somewhat.

conductor. That was what I had on hand. Later, the wire was changed to medium duty wire 10/0.25 with black plastic covering.

ar



Middle joint is normal halved-in joint. Very easy to do. Timber should be made waterproof with Estapol or similar suitable paint.
The small nails are put as shown. The first one is 1" in from the end of the arm, and all the others are spaced 1/2" apart.
It is a good idea to put 12 nails in each row. This will take about 85ft of wire. You can remove any unused ones or leave them in.
If this stub end is too large to fit into the top of the barge mount, suitably sized "U" clips can be used.



This drawing is not to scale, but does show the winding. I found it easiest to start from the outside and wind towards the centre.

Technical Correspondence

Improved Great Circle Bearing Program

I HAVE BEEN experimenting with the Great Circle distance and bearing program submitted by VK3IT in the January issue and have made a few modifications that others may find useful. For a start, my version of Basic (GW-Basic v.3.2) does not support the ACOS or the ARCCOS command, so it was necessary to use the ATN command as at lines 160 and 190. Incidentally, the manual omitted the "minus" sign after the initial bracket, and I found it was required by using log tables. Remember them? Next, I thought it would be unusual to know a co-ordinate, particularly an overseas one, down to seconds (one minute of latitude is about 2km), so the conversion of seconds to radians came out. Then I truncated the distance and bearing to whole numbers (the PRINT USING command). Finally I reduced the accuracy of the conversion factors to more common or garden values, and found it made a difference of 1km in the distance from here to London. Incidentally, I rearranged the lines 240-270 (original program) because I was being told I had a problem with the bearing calculation before the distance result had been printed and so had no indication whether the distance calculation was right (it wasn't).

I hope the above is of some interest and that VK3IT forgives me for tampering with his work. The alterations are not meant to be a criticism in any shape or form.

J H Knowles VK3JK
PO Box 11, Yinnar 3869

More on Element Phasing

Des Greenham has revived a most versatile antenna that, using tuned feeders, can be used efficiently over two to three octaves. The basic idea is credited to Franklin, who arranged many half waves, connected together with quarter-wave stubs, in a line to form a broadside array. This is still an excellent method, set up vertically, of obtaining a high-gain omnidirectional antenna with a low angle of radiation suitable for 28MHz and higher. In that application, end feed at the bottom is usually preferred.

Back to Des' antenna; another dB or two can be obtained by making the elements five-eighths wavelength. This will also improve its efficiency at 7MHz and it will be quite usable at 3.5. The pattern changes and breaks up if five-eighths is exceeded. This was the antenna issued with the Army "portable" 5kW SWB 8. Links in the elements allowed for several bands to cover 2-22MHz.

Robert R McGregor VK3XZ
2 Wiltshire Drive
Somerville 3912

Heading Finder

I was interested in the article by VK5BFB and VK5JG in the December '91 issue of *Amateur Radio* (page 21) on the modified globe heading finder.

I have used a similar model for some 20 years and, within a second, can find any direction, long or short path.

The construction needs only two additional holes drilled in the globe and a marking pen for markings as follows. (No special skill required, and takes only 20 minutes at most).

1) Take any globe out of the usual holder pins at North and South Poles.

2) Drill two new holes in the globe, one at your QTH, and the second directly opposite.

3) Clip the globe back into the original holder but positioned now in the new holes.

4) Take a marker, hold it on the globe-holder centre (0) and turn the globe, marking a ring around it (your new equator).

5) Position the North Pole on the globe under the half-round holder and mark this point as "N" on the new equator.

6) Turn the globe through 180 degrees and mark "S".

7) Follow this procedure until you have marked on your new equator on the globe: N, NE, E, SE, S, SW, W, NW, turning it clockwise at the top, and there is your direction finder.

The area under the half-circle holder is short-path. Opposite is long-path.

PS: If you use the globe frequently, fit two metal eyelets in the new holes and they will never wear out.

John Kramreiter VK3DCJ
7 David St
Knoxfield 3180
ar

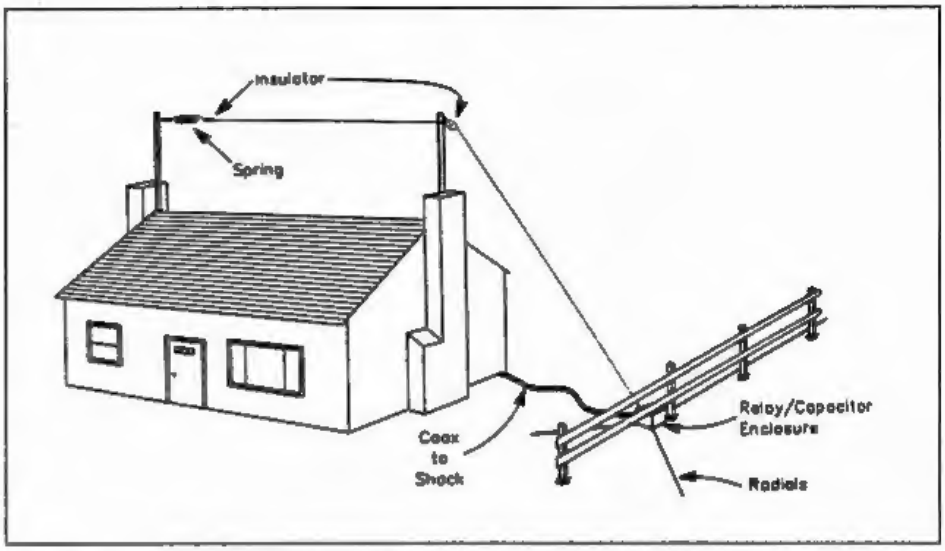
Random Radiators

RON FISHER VK3OM AND RON COOK VK3AFW

Restricted Space Antennas

JIM VK2DJM, WHO RESIDES in a retirement village at Ballina, reports on his present antenna system. He had tried to use a commercial vertical, but was unable to get it to tune properly and concluded it was faulty. Unfortunately, when it was shipped back to the agent, thieves struck and half the antenna disappeared in transit.

Now Jim is not easily discouraged, so he cut a dipole for 14.028 MHz and installed it on the outside wall of his unit, using nails, egg insulators and picture-frame wire. It is only about 15 cm (six inches) below the gutter and clears the brick wall by about 3 to 5 cm (one or two inches). In plan view it looks like a square ring, with a gap on one side. It is fed with 75 ohm coax - I can't recall if he used a balun or not.



He had immediate success, receiving reports of 579 to 599 from all around the globe. With the aid of an antenna tuner, he has also been able to operate on 18, 21, 25 and 28 MHz. To date there have been no TVI problems.

So, don't neglect the humble wire dipole, don't be concerned if it has to be bent to fit your situation, and don't dismiss the possibility of working DX with an antenna as low as two and a half metres (about 8 feet).

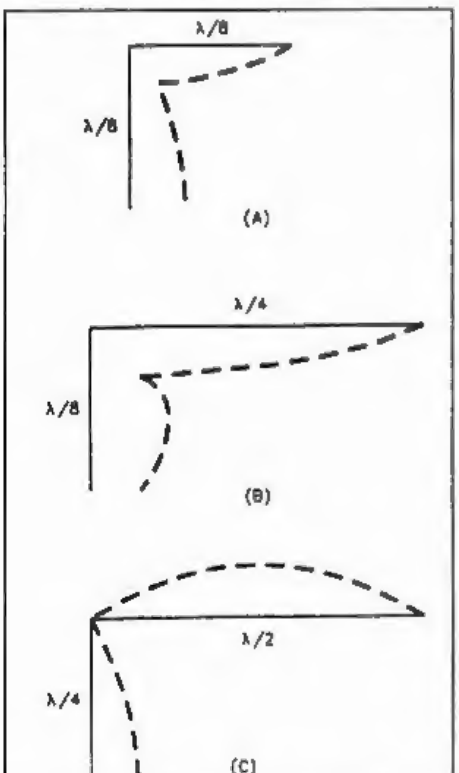


Fig 1 — At A, the basic inverted L commonly used on the lower frequency ham bands. The dotted line represents current distribution. The 3/8-wavelength inverted L shown at B features a more favourable current distribution. At twice the fundamental (C), the antenna at B acts as a 3/4- wire. Note the two current maxima. The antenna behaves like a quarter-wave vertical end-feeding a half-wave dipole.

Another Wire Special

The July 1991 issue of QST contains a good article by Dennis AE6C, on a multi-band inverted L antenna. With combined vertical and horizontal radiating sections both local and DX operation is achieved, the horizontal section giving high angle radiation for locals and the vertical section giving low angle radiation for DX. It is cheap and simple to build and is capable of operation on two or more bands.

The disadvantages are the need for an efficient earth or counterpoise and the need to use a matching unit.

Dennis suggests using a total wire length of 3/8 wavelengths on 80 metres, 96 feet total length, with 64 feet (nominal) of this arranged horizontally. The horizontal section can be supported by masts fixed to the ends of the house. If your house is not 64 feet overall, you can reduce the horizontal section by up to 15 feet, indeed Dennis used 50 feet for this part. Alternatively, try a diagonal or use a mast fixed to a fence post. In practice, if the horizontal section is between 50 feet and 70 feet in length, no significant problems will arise. The 'vertical' section need not be vertical and Dennis suggests sloping it etc. So long as the total length is about 96 feet there is nothing critical about the relative lengths of the vertical and horizontal sections.

The vertical (sloping section) will work better if it is well clear of buildings and trees, and the horizontal section should be as high as can be arranged. Due to the length of the 'vertical' section, the maximum height will be about 35 feet.

Because there is no coax feeder to support, the masts used can be of quite light construction. Painted timber would be ideal. Don't overlook the possibility of using one or two trees to hold up the wire. A bit of a slope on the horizontal section won't matter.

For earthing, Dennis used an 8 foot (2.4m) long earth stake in part of the garden watered by an in-ground sprinkler. This is supplemented by three radials, two less than 20 feet long and one about 100 feet long which snakes along the side fence. While the antenna will work with only the earth stake, the addition of buried radials up to 20 feet long or an insulated counterpoise system will improve the antenna efficiency, particularly if it is to be used on 160 metres.

The feed impedance will be about 100 ohms on both 80 and 40 metres. A remote

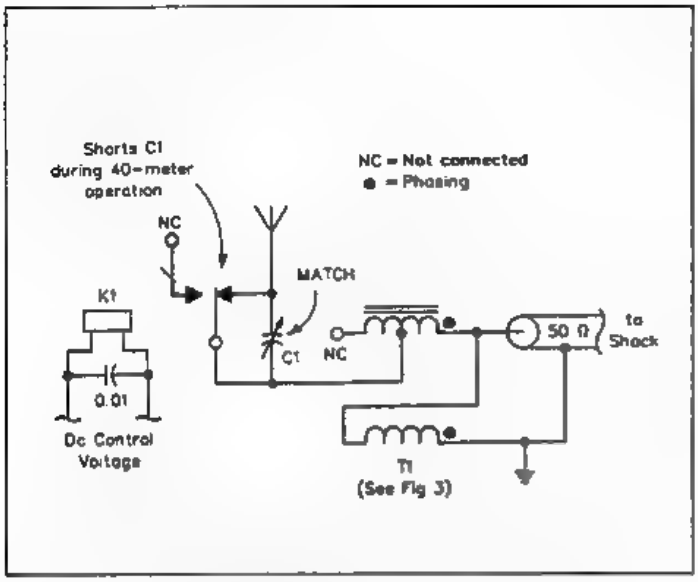


Fig 2 — The resonating, impedance-matching and band-switching circuitry required at the base of the inverted L, assuming a 50-Ω coaxial feed, no antenna tuner and a limited ground-radial system. See text for details and other feeding options. Fig 3 shows details of T1.

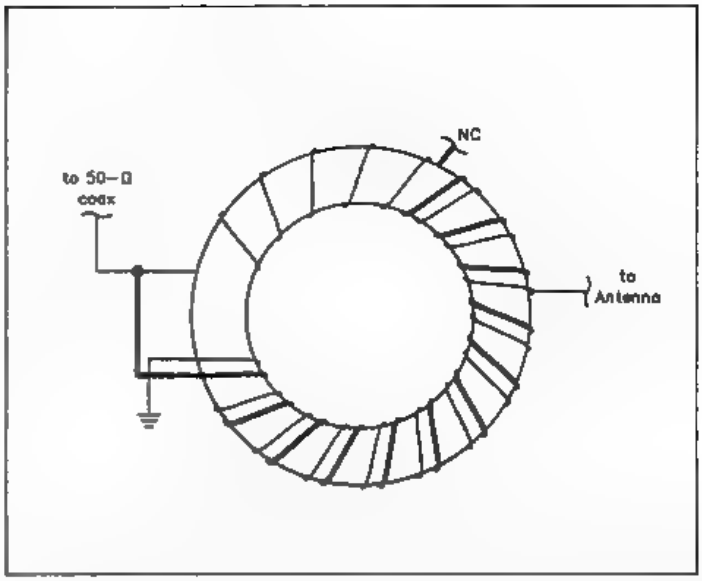


Fig 3 — Winding details for constructing broadband bifilar transformer T1. You can use an Amidon FT-240-61, FT-240-43 or T-200-2 core. The primary is 16 turns of no 14 enamelled wire, and the secondary is 10 turns of no 14 enamelled wire tapped at about the eighth turn from the feed-line end.

antenna tuner could be used to match to 50 ohm line which could be buried for the run back to the shack.

Dennis used a tapped bifilar transformer and a capacitor to achieve good matching on 80 metres. On 40 metres the capacitor is shorted by a relay, and the transformer provides an adequate match. Details are given in the article.

I suggest that a length of 75 ohm coax could be used with matching achieved by an ATU in the shack. The SWR on the 75 ohm coax should not exceed 3:1 approximately across either band and should be about 1.3:1 at resonance on 40 metres. No significant losses will occur with such an arrangement. Whatever arrangement is used, don't forget to seal the coax connections (and external match unit if used) against ingress of water.

The antenna can be used as a short top loaded vertical on 160 metres but it is not resonant and needs a series inductor switched in at the base of the 'vertical' section. The feed resistance will be perhaps 15 to 20 ohms. It is 3/8 wavelengths long on 80 metres and the feed impedance is reactive, appearing as about 100 ohms resistance plus some series inductance. On 40 metres it is 3/4 wavelengths long and should be resonant in the band with a resistance of about 100 ohms.

Unfortunately on 20 metres it is 3/2 wavelengths long and has a high feed impedance which would require a different matching arrangement. On 15 metres the antenna is 9/4 wavelengths long and should be resonant at or just below the bottom of the band. The feed resistance would be more than 100 ohms but should be manageable with an indoor ATU and the 75 ohm coax suggested.

Dennis does not consider using the antenna on any frequency other than 160, 80 or 40 metres and suggests a double size unit if 160 metres is to be used often. Yet the system should operate quite well on 80, 40 and 15 metres, and with reduced performance on 160 metres with an indoor ATU. If an ATU is installed at the end of the 'vertical' section, (commercial, weatherproof, remotely operated ATUs are around) then all HF bands could be used.

Copies of the original article may perhaps be obtained from the WIA.

73 from the two Rons. ar

(Illustrations from Dennis Monticelli AE6C 'A Simple Effective Dual-Band Inverted-L Antenna' *QST* Vol LXXV No 7 July 1991 pp38-39.)

TRY THIS

Morse Key Holder

PETER SPENCER V5KBK

Having built a nice new operating desk for my gear, I was rather loath to screw the key down to the desk top

After some thought, I tried securing the key base with four pieces of double-sided adhesive pad material which is sold for the purpose of fixing pictures to a wall or other similar uses. This has worked very well and the key is as solid as a rock.

My desk is covered with a material similar to Laminex, and is quite smooth, so I imagine the pads would adhere quite well to most similar materials. Should it be necessary, at any time, to remove the key, the pads can be removed with any common solvent such as Shellite or X55. If necessary, a trim knife can be used to cut judiciously through the thickness of the pads. Removal of the pads leaves no trace of any marks, and the desk surface is preserved.

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The RL Drake Company: 45 Years Young (1988)

BILL FROST WD8DFP. SUPPLIED BY JOHN WEIR VK3ZRV

(CONTINUED FROM JANUARY ISSUE)

THE COMPANY CONTINUED TO produce satellite equipment for other manufacturers under their names. Receivers at this time were being shipped at a rate in excess of 10,000 units per month. A peak occurred when 19,000-plus units were shipped in one month.

The European home satellite market was just beginning, with only a couple of satellites reaching Europe. This market beckoned for a well engineered, quality product. The call was answered with the ESR-424E, APS-424E, ESR-324E and the APS-24E. These units were well established in the USA and, with a few minor changes, to meet the European requirements, were soon in much demand by overseas distributors. The 424 series units were updated and improved in 1986 and became the 524 series.

Single conversion was losing out to the block type units and were dropped as an alternative model. The ESR-524 receiver was the top-line receiver until the announcement of the ESR-924i. This imported receiver was introduced in 1986 as the company's first integrated receiver. It housed the receiver, antenna positioner and included stereo sound. On-screen graphics were added later to the ESR-924i to make it even more popular. The ESR-324B was given new life with a redesign, and the announcement was made on the release of the ESR-324S which included stereo, and the ESR-324i, which included stereo and the antenna positioner. Both units were met with great acceptance by the marketplace. These units are still a part of the company's product line.

In January 1987, and again in January 1988, the company was named by the Greater Dayton 100, as being among the top 100 largest, closely held companies in the Dayton area, based on product sales and employees. In September 1987, the Service department received a plaque and honours for being the top service department in the TVRO industry, and for having a quick and speedy parts department. The honours were received from the Electronic Technician Association Inc.

The ESR-2400 was introduced in 1987 as the company's first IRD (Integrated Receiver Decoder) receiver. The unit contains stereo audio, antenna positioner (pot or pulse type), C band or Ku band compatibility, on-screen graphics, infrared remote control, and the video cypher II (tm) decoder model. The ESR-2400 is the ultimate receiver and an example of the R L Drake Co engineering department's excellent expertise. The ESR-2024 was later introduced as a little brother to the ESR-2400. It had a few less bells and whistles, but it still retained the same high quality. These two units are the company's top guns for today; however a relentless competitor expects to take over as number one in the industry. The R L Drake Co and its employees do not intend to let that happen.

An R L Drake Co "Made in America", product is beyond ultimate!

Compiled and written by Bill Frost (WB8DFP) Service Department Manager R L Drake Co.

First printed in Printed Circuit, *the in-house publication of the R L Drake Co Miamisburg Ohio USA.*

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Amateur Radio in China
(With some emphasis on 6 metres.)

RON GRAHAM VK4BRG PO BOX 323 SARINA 4737

MY RECENT VISIT TO China, together with three other VK amateurs, was primarily to participate in a Radio Direction Finding competition in Nanjing. We also had the opportunity to visit four Club Stations and meet a number of Chinese Amateurs.

Four prefixes were noted to be in use; BY for Club Stations, BZ for Individual Calls, BT for Special Events, and BR for repeaters. At this stage in time, no "individual" (private call holder) has equipment at home. Consequently, their operating is done from a club station where they can use their Individual or the Club callsign.

I noted QSL cards being sorted and it appears that most Individual call holders use their Club mailing address and that they are responsible for their own QSL'ing. One of the Club's Directors handles the cards sent to the Club call. From my observations, log keeping appeared to be of a satisfactory standard.

Licences

There are four licence classes with 1st Class being the highest and demanding a 90 character per minute (CPM) morse ability. The 2nd Class licence has a morse requirement of 80 CPM and the 3rd Class 70 CPM. I understood, though there was some language difficulty, that both the transmitting and receiving morse tests were for a duration of ten minutes each.. a long period by our standards. There is a graded technical examination for the above licences. The 4th Class licence is for SWL's and no call sign is available.

Apparently there are 30 to 40 each 1st and 2nd Class licences in the whole country. When I enquired about the number of 3rd and 4th Class licence holders, the answers were "many" and "many many" respectively... guess we draw our own conclusions!

Beijing

In Beijing we visited BY1PK and, as this station is in the national capital, the fact that it seems the best equipped is no coincidence. The station is on the top floor of a four storey building with the antennas on the roof. Two HF stations with associated beams...one station is dedicated to packet. A satellite station (Mode B) and the 2 metre repeater (BR1PK) are also installed. The 6 metre equipment consists of a TS-670 feeding a manually rotatable 6 element yagi about 3 metres above the roof. It was noted that when the beam is facing the east, it is firing into a concrete structure on the roof. The 6 metre rig had been disconnected, but was soon reconnected when I showed interest. A few CQ calls were made, but no response. One of the Club directors told me that they have only ever worked JA on 6m and he seemed fairly well convinced that they were too far north to enjoy any other worthwile propagation. Naturally, it was difficult to convince them otherwise, however, the subsequent contact between VK4JH and Mongolia may help the argument. To my way of thinking Beijing lies nicely between Mongolia and Japan, so it should be workable, at least from this part of the world. The fact that the 6 metre rig was disconnected and that Kang, BZ4SAA, said BY1PK was not very active on 6, indicates they need some more inspiration regarding 6 metres!

Antennas on the roof of BY1PK Beijing. The two HF Beams are obvious, the wire cage antenna between them is used on 40m. Under the right hand HF Beam are the 2m and 70cm satellite antennas.

Other Clubs

We next visited Nanjing, the venue for our Radio Direction Finding activities. The Club had a special call, BT4RDF, organised for the duration of the above activities and is set up for HF operation including packet. No 6 metre activity is possible in Nanjing due to the band being occupied by TV.

To assist readers with their geography, Nanjing is 300 km west of Shanghai. The next Club visited, Zhenjiang, is about 70 km east of Nanjing and is part of a complex known as the "Childrens' Palace". This complex seems to me to be dedicated to both general education and

many extra curricular activities of which amateur radio is one. The station, also on the top floor of a 3 storey building with the antennas on the roof, is equipped for HF and 6 metres. The 6m station has the advantage of a 150 watt amplifier. There had been a problem with the 6 element 6m beam, and as an in-line SWR/power meter is permanently connected, I observed that the SWR was quite low and the amplifier was delivering 100 watts.

The Director of the station is retired from the army where he was the chief instructor in radio signalling. His wife, an English teacher, and his two sons, one of whom is soon to graduate in electronics, were all present and they all hold amateur licences. The Director prefers CW operation and was not aware of the 50.110 calling frequency or the 28.885 liaison frequency. I did note in the 6 metre log book contacts with 3D2PO and VK8ZLX on the 26th July.

About 150km further east we visited BY4SZ in Suzhou where Kang BZ4SAA is the Director. Kang is well known in VK as he has supplied most of us with China on 6 metres. He has acquired some nice equipment for the club..an FT-ONE was feeding a TL-922 linear on HF. A Henry 2K4 linear and a 5 KVA mains power stabiliser looked very impressive. The station also has a small HF rig which has been used on DX-peditions. A TS-600 or a FT-726 and a 5 element yagi are used on 6 metres and Kang is expecting, from a JA8 friend, a 500 watt amplifier due next year. QSL'ing may be a little slow from this station as Kang explained that the post office is quite a distance away, so they only clear it once per month.

So the club is the centre of amateur radio activity in China and it is pleasing to note the emphasis on getting the young people involved. Actually, the clubs are under the control of the "Chinese Radio Sports Association" (CRSA) with the club Directors being paid by, and the clubs operating within, a budget provided by the CRSA. Nevertheless, most club equipment has apparently been donated by Japanese sources, and a little from American sources.

Six Metre Possibilities

From the accessibility of China on 6 metres, particually from the US and a lot of the Pacific, I was thinking that area around Guangzhou (Canton) could be the most practical. This area as well as being fairly well south, is close to the well established paths to Hong Kong and Manila. However, from what I could learn, there is no 6 metre activity and, indeed, no club activity, in that area. Possibly this could be followed up with some of the VS6 amateurs, some of whom may have contacts in that area. ar

Bringing Amateur Radio to (Adelaide) Camp Quality 1991

Chuck Waite VK5CQ, GPO Box 222, Adelaide 5001

Amateur Radio at Camp Quality '91

CAMP QUALITY IS A week of quality camping activities for children who have — or have had — cancer. Camp Quality '91 was a week of good fun for campers and volunteers alike, under the caring administration of its Director, Dr. Keith Bailey.

We in the Amateur Radio community are proud to have been among the many volunteers who helped make this year's camp a success for its campers.

Below is a report of some of the events that comprised our work, our experiences on-camp, and some of our joys resulting from the same.

What Happened at Camp this Year?

Camp Quality '91 provided activities (from Sunday 29 September through Friday 4 October) for about 60 children and a like number of their adult companions. In addition, some day-campers joined in the activities when their schedules and conditions permitted.

We amateurs, like other volunteers, participated on a part-time basis, fitting our program of activities into a busy camp schedule.

Antenna & Station Setup

On Sunday afternoon, while the children, their companions and camp staff were settling into their dormitories, we began the work of setting-up and testing our antennas and stations.

Station equipment, comprising a Kenwood TS-820 and ICOM-based voice packet stations covering 160-10, six and two metres, was supplied by the WIA and Chuck VK5CQ, respectively. Thanks to Murray, VK5ZQ for testing and arranging transport for the WIA's transceiver.

The Adelaide Hills Amateur Radio Society (AHARS) supplied a portable three-element beam for the traditional DX-bands, 20, 15 & 10 metres, in the form of a TH3jr, as well as a team (comprising Geoff VK5TY, Christine VK5CTY, John VK5CSH and Brian VK5NOS) to set it up. The team did a good job, as our first contact confirmed: Korea on the first call!

Shep, VK5DC, supplied a tape-doublet (a nifty Hy-Gain TD-1), which we used along with cable supplied by Morris VK5KWM for our evening inter-camp contacts on 80 metres. With the help of Tony VK5PBH, and the AHARS team, this antenna was soon in place on the spire, overlooking the building in which our station was set up.

Electronic Kit-Building

For many of the children, technology has come to play an unusually large part in their lives, mainly in the form of instruments of examination or treatment. At the suggestion of Kevin Johnson (Camp Quality's Registrar), we offered each camper the chance to experience technology from a new perspective.

At Camp Quality's several technology sessions, our campers could get a feeling of being in control of technology for a change: building up an electronic kit from the component level gave them that feeling — along with a good helping of "I can do it!" when — at last — the assembled kit worked.

Most of the children built up two kits and — with the help of an "Elmer" or two from our team — experienced the satisfaction of success from each one.

This year's kits included a Morse Code trainer and a wireless microphone, as well as two LED-based toys.

We did our part to encourage our campers to get "on-the-air" — one way or another.

Thanks to one of our number, who thought to bring along sheets with the Morse Code! Several of the children expressed interest in Morse that was enhanced by a quick show-and-tell and reinforced by their being able to take along one of these sheets.

In fact, one of the day-campers told me he had gone to the library (the day after our Morse Code show- and-tell) to find a book from which he could learn more about Amateur Radio!

Lest I forget to thank the team of "Elmers" — both OM & YL alike — I'd like to mention those who assisted at the

kit-building sessions this year:

We were very pleased to have a roster of YLs along, members of the Australian Ladies Amateur Radio Association (ALARA): Denise VK5YL, Meg VK5AOV, Christine VK5CTY, and Paddy VK5ZYB.

Among the OMs were: Ray, VK5BT, Chuck VK5CQ, Rex VK5HO, Ron VK5RV, Lloyd VK5TP, Ron VK5VH, Murray VK5ZQ, Dave VK5CJE, Les VK5KLH, Morris VK5KWM, Norm VK5ZBO, and Grant VK5ZWI, as well as Cameron from the RAAF (whom we hope will become a licensed amateur in future).

Those Spontaneous Radio Hams!

Our team really showed its spontaneity this year. When something was needed, it was there, even it had not been specifically arranged in advance.

If something seemed to go amiss in a kit, a solution was soon found.

Individuals came up with at least three designs for mountings or cases for the assembled kits. As a result, the Morse Code trainer ended up being far more durable, and the frequency of the wireless microphone was much more stable in the new design.

There were also at least two awards made to campers, of prizes created and provided by our team members.

Norm VK5ZBO, brought along a toy acrobat — which he had hand-crafted in wood — that aroused curiosity, as each child who saw it perform tried to figure out just how it worked. It was Norm's pleasure to award it as a prize to camper Paul, who managed to build up all four of the electronic kits with success!

We were also pleased to find among our number author Ron Holmes VK5VH, who presented a copy of his book *The Magic of Mr Ree* — about a radio ham in Mt Gambier — to our camper Adam, who lives in that part of South Australia. (Adam's voice was to be heard, on 80 metres, talking to his parents, via the Club Station VK5SR).

A Hobby that Keeps You in Touch

When you think about it, Amateur Radio is also a great hobby for someone whose treatment may include periods away from friends or school. It can provide contact with other people when travel may be difficult or impossible.

Needless to say, we hope that some of our campers will eventually join our number in the fraternal hobby of Amateur Radio. To this end, we offered our campers a look at several of the operating modes and sides of our hobby

Amateur Radio Station Show & Tell

We purposely chose to locate the amateur station in the same room where kit-building was going on; the idea was to try to arouse curiosity in the station, by letting the campers listen to ongoing QSOs while they were assembling their kits. It worked!

Even those who chose not to talk "on the air" gave the receiver a try, some even managing to develop skills in tuning in SSB signals on HF.

Our Chat with England

On Monday afternoon, Dave VK5CJE helped us by sharing his weekly schedule with England. Of course, Monday's weather was so sunny and warm that many of the campers chose to go swimming rather than partake of this warm conversation between friends, but it was good to make the connection for those who did partake.

Campers Chat with Family Back Home

It has become a tradition at Camp Quality to try to connect some of the campers with their families back home; this year we connected some of those who came from the Mt Gambier area, with parents and a sister there, thanks to VK5SR (with VK5SI operating). It was a real joy to see our campers' eyes light up when they recognised their parents' voices on the radio!

Chats with Camp Quality — Victoria

This year, some of the campers from Adelaide went to the Camp Quality held in Victoria; so, it was good to make contact with Warren, operating VK3CVQ there, so we could put some of our campers in touch with their friends in Victoria.

For those readers who have raised children through the teenage years, you can imagine what it sounded like; for the rest of us, it seemed to be more good fun for our campers!

Putting the Camp's Video-Recordist into Contact with "The Old Country"

One afternoon, 20 metres opened into Europe. Soon, I managed to contact hams in Italy, in which the camp's video-recordist had been born. Of course, by the time I found him, this Italian station was nowhere to be heard ...

But there were more IKs where he'd come from and we contacted the next one! Imagine his surprise when I put someone on the mike "to surprise him" by speaking excellent Italian!

As it turned out, this short QSO also aroused the interest of our recordist in Amateur Radio. He returned later that same evening to ask about the equipment and amateur licence examinations.

Linking Up with a Space Station

On Wednesday — a day we were not originally planning to be at Camp Quality — I received a very unusual message on my pager:

02/10-09:17 Soviet cosmonauts can be contacted 11:32 to 11:42 -- azimuth 307-130, Max elevation 65 degrees — tonight. Would you call them; they're waiting for your call. From Maggie VK3CFI.

PS "FREE-YO" is Russian for "OVER"

Being open to a change of schedule, I contacted a neighbour, Collin VK5EB, who is active in amateur space communications. After running a PC-based satellite orbit modelling program, Collin confirmed there was indeed a chance to contact a space station that would be passing over Adelaide later that evening.

With this in mind, I rang Denise VK5YL (who had already volunteered to round up an additional Morse Code trainer kit for a camper to build on Friday) to ask if she or her OM, David VK5RN had any extra coaxial cable for the antenna that we would need to reposition for the link-up. Thanks to David, for making up the needed length, and to Denise for constructing the base needed for the antenna we were to use.

The link-up went smoothly, and our camper Gabi had a nice chat with each of the cosmonauts in the space station during its 10-minute window over Camp Quality, as was to be heard in the following week's WIA Broadcast.

Should I admit that I — a radio amateur, with years of experience in over three countries now — actually "choked up" when we first made contact with the space station? Excitement can really be contagious!

Connecting with Victoria on Packet

Meg VK5AOV demonstrated how digital modes work, by connecting to VK3JAV on two metres via VK5RAD,VK5KAU, VK5RPM and VK5RPG. As a result, some lucky campers had "digital QSOs" with amateurs in Victoria on Friday morning.

(Of course, I managed also to read my mail during my stay at Camp Quality.)

Meeting South Australia's Governor

Although originally planned for the benefit of the campers, some of us had the chance to meet the Governor of South

Australia, Dame Roma Mitchell, during her visit to Camp Quality on Tuesday afternoon.

As a newcomer to Australia (and, in particular, to South Australia), I felt honoured to be able to meet our Governor and tell her of Amateur Radio and the technology sessions at this year's Camp Quality.

As it turned out, her nephew was among the campers who had expressed interest in learning the Morse Code, after one of the technology sessions.

Possible Improvements

Looking back over our week at Camp Quality '91, I think it's fair to say that things went pretty well as planned, and yet there were a few things which could have been improved. By way of suggestion for next year, we offer these reflections:

First, it was very good having our team members monitoring our HF contacts from their home-stations, so we would know when the two Camp Quality stations had doubled. Thanks to Dave VK5CJE, and Murray VK5ZQ.

But it would have been nice to have made a kind of announcement (say, on two metres) of our active operating frequencies, so that others could have enjoyed monitoring our inter-camp or space station contacts, as well. Perhaps a message to a known packet-BBS would be a good way to share such details.

Next, it might have been nice to have a team hat or T-shirt such as the Robin Hood Archery Association had, so we could be identified as hams.

Of course, it would have been nice if more of us had worn hats, if only to help those who'd lost hair from treatments feel better about wearing their hats ... Next year, maybe we'll have a team cap!

I suppose we could have done better to chat with Camp Quality in Victoria before the campers' families in Mt Gambier, due to the time difference and the number of campers involved. Perhaps the solution would be to arrange more specific skeds in advance.

Last, but not least, as one who was encouraged to taste the Vegemite at lunch, albeit in a circle of fellow amateurs, I thought it would have been nice if someone else had also put a bit of this salty spread on their bread as well. Oh well, I suppose every newcomer must be initiated ...

Thanks, All, for a Job Well Done!

Needless to say, we couldn't have done it without the fine support and efforts of the organisations and individuals involved. I've tried to mention, above, as many as our records and memory let us connect with specific tasks, but some may have inadvertently been omitted.

To those who helped with Camp Quality '91, I'd like to express my appreciation, and relay that of the campers and staff, for a job well done!

It was sure a lot of fun, but I'm sure we also did some good up in Mylor!

Charles M Waite, M Sc, is a licensed radio amateur (VK5CQ in Australia, WG3L in USA), Member, Wireless Institute of Australia (WIA) — SA Division; Life Member, American Radio Relay League (ARRL); Technical Member, Technical Aid to the Disabled (TAD); Co-ordinator of Technology Activities for Camp Quality '91. Mr Waite is a permanent resident of Australia, who arrived in mid-April 1991. He is presently seeking to apply his talents in the computer/communications field here. E-Mail Address: VK5CQ @ VK5WI, SA,AUS,OC. Pager: 016 889 105. Postal address: GPO Box 222, Adelaide SA 5001.

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Help protect our frequencies - become an intruder watcher today

The History of DX

JA Gazard VK5JG
2 Corbin Rd, Medindie Gardens 5081

RADIO AMATEURS HAVE always needed a measure of the performance of their equipment, and from the start of amateur radio the obvious measure has been the distance over which signals could be heard. In the early days these were small. A history of amateur radio in USA, *Two Hundred Meters & Down*", shows the relative performances with different sizes of spark transmitters as follows:

Spark coil	1"	2"	4"	6"	10"	15"
Miles	1/4-3/4	5-10	10-20	15-30	50-75	75-100

If the spark coil was replaced by a 1/4kW transformer 100 miles could readily be obtained. The history also relates that in 1914 the 1kW input spark transmitter of H P Maxim, a leading amateur, had a range of 100 miles.

Today these distances seem incredibly small, but it must be remembered that the wavelength was around 200 metres; spark-generated transmission was very inefficient and spread its energy over a very wide band; the receiver was a detector only, with no amplification; and the aerials were untuned random wires.

After a new contact, an amateur could locate the new station on the map and scale off the distance in miles. Efforts were continually made to increase distance and, in morse code, the word "distance" was frequently used and was abbreviated, first to "d" and then to "DX", and this term has remained in use to this day, although it now has a wider meaning than distance in miles.

As improvements were made to equipment, distances improved considerably. In 1917, a special relay from the east coast to the west coast of USA was made in four steps, the longest of which was 1040 miles. Early in 1921, attempts were made to send signals across the Atlantic. In the first attempt times were set for Americans to transmit and Britons listened. There were a large number of British listeners, all using radiating regenerative receivers which caused great interference and jammed the transmission. Another test was held later in the year, and this time an expert American, Paul Godley, was sent over to Scotland and set up his receivers in a tent on the east coast near Ardrossan. This time, in 10 days of listening, more than 30 Americans were heard by Godley. Several British amateurs also heard the trans-Atlantic signals, but there was no two-way working.

By this time some valves, ranging in power from five watts to 250 watts, had become available to amateurs, and some amateurs used valve transmitters in these tests. Although the valve transmitters had less power than the spark transmitters, two thirds of the stations heard used valves, and thus the superiority of the valve stations was demonstrated, and in a year or two spark was no longer used by amateurs.

At about this time, to escape the interference on the 200m band, amateurs began moving into the higher frequencies, and it was not long before it was discovered that much greater DX was possible on these frequencies. By 1924 the phenomenon of reflections from the ionosphere was understood, and intercontinental contacts were being made. Although the effect of sunspots was not known at the time, a sunspot peak occurred in 1925, and new records were made in DX working. Any country in the world could be reached on 40 or 20 metres, and DX was not longer measured in miles but rather in places (countries).

In April 1926 the American Radio Relay League (ARRL) began giving awards called WAC (Worked all Continents) to amateurs who made two-way contacts with all six continents. This was not easy to achieve at first, because there were few amateurs in Asia and South America but, by 1935, more than 1500 WAC certificates had been issued. Shortly after, the ARRL introduced the DX Century Club, membership of which was given to amateurs who made two-way contact with 100 countries. This feat is very much more difficult than WAC obviously, and can be achieved only by very special effort. The WIA now has a similar award.

Amateurs who have worked 100 countries have not stopped there, and some have worked more than 350 countries. This requires extreme dedication. Amateurs have made new countries available by visiting countries where there are no amateurs and setting up stations there. They have also set up stations on small uninhabited islands away from the mainland to provide extra countries.

DX has always been a big feature of amateur radio. It is fascinating to find that you can communicate by voice or by code with random people on the other side of the world, and most amateurs have enjoyed working DX at some time. Because the majority of early radio amateurs were English speaking, English has become the common language of amateur radio. Amateurs speaking other languages can learn the few English words necessary to make contact by listening on the bands. This is most easy on CW, where an abbreviated language sometimes called CW English has developed, and it is interesting to hear, for example, a Spanish amateur using this language when in contact with a Russian.

With DXCC scores at over 350 countries, there must be very few, if any, left, and now there is a new competition: the five-band DXCC — 100 countries on each of the five bands: 80, 40, 20, 15 and 10. ar

KK3K and WB6LYI in OSCAR DXpedition

Lambda Amateur Radio Club President Jim Kelly KK3K of Philadelphia, PA and Vice-President Don Bledsoe WB6LYI of Long Beach, CA, will begin the first OSCAR operation next March from VP2E (Anguilla) and VP2V (the British West Indies). Their operating schedule for AMSAT OSCAR-13 runs 10-16 March 1992.

Don will begin the DXpedition operation from Anguilla as VPW3/WB6LYI during 10-13 March. Jim will operate as VP2V/KK3K from Tortola, 13-16 March. Neither of these DX countries has been on the air on OSCAR-13 before, so they anticipate there will be numerous stations attempting to work them when they come on the air, especially since they will be operating for such short periods of time at each DX location.

Northern Corridor Radio Club member, Graeme Wilson VK6BSL helps out while Leon Young of the 1st Mullaloo Scout Group talks to fellow Scouts in Hobart, Tasmania, during last year's JOTA. Photo by the author.

Brownies from 1st Pinaroo Scout Group shown here with Bill Billington VK6UE were among the many Cubs, Scouts and Guides taking part in this year's JOTA. Photo by the author.

Scouts on the Air

CLIFFORD YOUNG VK6ZIZ, PO BOX 280, HILLARYS 6025

MEMBERS of Perth's Northern Corridor Radio Club were among the hundreds of radio amateurs around Australia who turned out in force to help in the recent Jamboree of the Air (JOTA).

One of the club's members, Graeme Wilson VK6BSL, spent more than seven hours helping local Scouts, Cubs and Guides to contact other Scout groups and amateur operators as far away as Texas. However most contacts were closer to home and included Queensland, Victoria, South Australia and Tasmania and also North and South Island, New Zealand.

Although Graeme concentrated on the HF bands, other members helped out on mobile and handheld VHF.

As in previous years, permission was given by DoTC to link repeater networks across Australia through the communications satellite, AUSSAT, over the JOTA weekend. This boosted VHF activity between the states and New Zealand considerably and radio amateurs taking part in JOTA weren't the only ones to take advantage of the opportunity.

Thanks must go to all those who helped make this year's JOTA a success. Events like this not only provide a useful service but also give wide exposure to amateur radio. Remember, many of today's operators first became interested in the hobby through events such as JOTA.

JOTA was held on the weekend of 19-20 October 1991.

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Editors Comment

(Continued from page 2)

Every new member makes things better for all the rest. It's positive feedback, either way, as I explained at some length in my November 1988 editorial entitled (would you believe?) "Positive Feedback". After 3-1/2 years I guess I can use the same word again!

And the fourth letter of comment? It was from my good friend and fellow "bureaucrat" Ron VK1RH. He was disappointed that last month's statistics were not a distillation of a magazine space usage survey by Graham Thornton late last year. There's time for that; perhaps next month?

Incidentally, reviewing my index to the 84 editorials I have written since 1984, I see that five contained the word "future" in the title. From here on, the words "feedback" and "future" are forbidden in the heading to these comments. Good words, but suffering a little from overwork! Does the same go for editors?

ar

YAESU FT-990 HF ALL-MODE TRANSCEIVER

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Two 10-bit DDS and a magnetic rotary encoder provide silky-smooth VFO tuning, pure local oscillator signals, and very fast Tx/Rx change-over - and that's very important for QSK CW and digital modes. The DDS is teamed with an extremely low-noise, high performance receiver front-end using a PIN-diode controlled push-pull RF amplifier followed by a quad-FET ring mixer. The result is a very wide receiver dynamic range from 100kHz to 30MHz. Transmitter signal purity is also enhanced, with circuit noise nearly 90dB down from the carrier.

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- A highly efficient AC switch-mode power supply is built-in! It allows high duty-cycle transmission while keeping the weight way down, saving space and the added expense of external power supplies.
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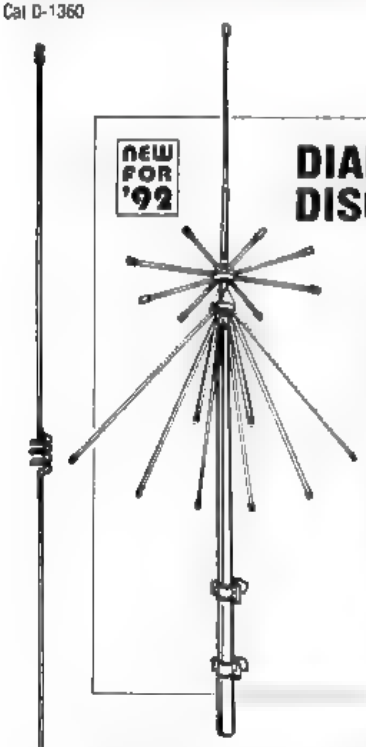

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Type: 3 x 5/8λ co-linear

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Gain: 6dB on 2m, 8dB on 70cm
Max. Power: 200W
Max. Wind Speed: 180km/h
Length: 2.5m
Type: 2 x 5/8λ(2m), 4 x 5/8λ(70cm)

Cat D-4860

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2m/70cm ANTENNA X-500A

Frequency: 144-148MHz, 432-450MHz
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Max. Power: 200W
Max. Wind Speed: 144km/h
Length: 5.2m
Type: 3 x 5/8 λ(2m), 8 x 5/8 λ(70cm)
Connector: N-type socket

Cat D-4865

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23cm ANTENNA F-1230A

Frequency: 1260 — 1300MHz
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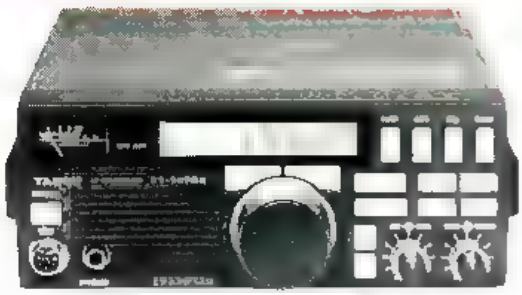

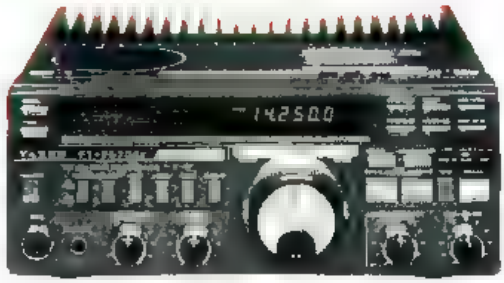

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Cat D-2930

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- Includes MH-1 hand microphone

Cat D-3492

2 YEAR WARRANTY! *SAVE $100* **$1695**

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The Story of Stephen Frith

PART 3 – BY H KARL SAVILLE VK5AHK

Introduction

THE ESSENTIAL FEATURES OF any communication device for the disabled must be speed of access and ease of operation.

However, it is not easy to devise a quick communication system for a disabled person who cannot use his hands. I had been asked to help Stephen, but had no previous experience to fall back on and, as far as I knew at the time, there was little or no written information available. I had to experiment and work on any ideas that might come to me. And, out of this came the realisation that to help the severely disabled you have to spend a lot of time studying their capabilities and their reaction to the communication system you intend to use. The system should be made to suit the operator and not the operator made to suit the system.

Access Methods

The Morse code is excellent for communication with a switch (key) but the operator must be able to send at a fair speed and with good rhythm. And, because the average person cannot read a Morse code message, a decoder is necessary for translation. The computer is ideal or this purpose but, unfortunately, Stephen's poor co-ordination and lack of timing skill make it impossible for him to use the system as it was intended.

As stated in Part 2 I used a scanning system to enable him to access the individual dots and dashes and assemble them until the required dots and dashes were ready to be printed and, although he used this system for several months, it proved to be too slow. It would take, for example, 20 seconds or more to print out the letter A. It was a time of experimentation and it did provide Stephen with a means of communication. Communication speed would be must faster when using phrases, however.

Comparison tests between the two systems showed that a straight scanning system was faster than the Morse code scanning system. To print out an A would take about six seconds with the normal scanning system, and it was time to make a change. And this would also provide a cleaner and clearer screen presentation, by removing the cursor and function items from the bottom of the screen.

I found that there are two main scanning methods of accessing and displaying characters on the display screen. There are possibly more, but I have come into contact with only two so far. For convenience I call the first one **scanning**, and the other **stepping**.

Scanning

Scanning is, in this case, the sequential selection of an option from a list of options. Unfortunately, the more options there are the longer it takes to scan the whole list. If the options are the letters of the alphabet (and numbers), there will be a total of 36 options, and these are displayed in a list or grid pattern of six rows of six columns.

In addition to the characters, there are other very necessary options which must be included, such as:

A **space** option to separate words.

A **delete** option to remove wrong letters.

And a **menu** option so it is possible to leave the program and go to another.

Other options may have to be used as required, such as a printer etc.

Presentation

In order to fit the extra options in a 6x6 grid we can use the capital letters I and O for 1 and 0, thus leaving two spare spaces in the grid which can be used for the space and delete options.

The menu option can be accessed by returning the program to menu each time the space option is accessed. The **printer** option is accessed at the menu.

A cursor, an arrow character, moves, or scans down the left-hand side of the screen and pauses at each row of the display list in turn. Each row is identified by a buzz sound. One buzz for row 1, two for row 2, and so on. In this way the operator can keep track of each row even if he is distracted for some reason.

Table 1: Display List

→	Space	A	B	C	D	Delete
	E	F	G	H	I	J
	K	L	M	N	O	P
	Q	R	S	T	U	V
	W	X	Y	Z	2	3
	4	5	6	7	8	9

I do not claim this as the best arrangement, but just one of a number of possible ways.

If the switch is activated while the cursor is indicating a row, the cursor changes direction and scans along the row, pausing for three seconds at each option. Pressing the switch, during the pause period, will print out the indicated option, in oversized characters, in the lower half of the screen, or act accordingly in the case of space or delete.

On completion of an option the cursor returns to the top left-hand position.

Stepping

The stepping system is the reverse of scanning in that the cursor is made to move by the switch and does not move by itself.

The stepping method is considerably faster than normal scanning, but it requires more skill and co-ordination from the operator. The cursor is initially stationary and sits above the display. When the switch is pressed and released the cursor steps down to the first row and, each time the switch is pressed and released the cursor steps down a further row. When the cursor reaches the required row, and if the switch is not pressed, the cursor will, after a pause of three seconds, print out the first option on that row. If the switch had been pressed before the pause time of three seconds had expired, the cursor would have stepped to the second option on that row, and so on.

With the stepping system, if the switch is not pressed before the pause time of three seconds, the option indicated by the cursor is carried out. If the operator can manage this method it is possible to select the most remote character on the display grid (the character 9) in about 12 seconds. This is assuming six moves down, three seconds wait to enter the bottom row, then six moves along and finally three seconds wait before printing out the figure 9. It would take 36 seconds to print out the same character using the scanning method.

If we assume the average time to access a letter for the scanning method is 36/2 = 18 seconds, a five-letter word would take about 70 seconds.

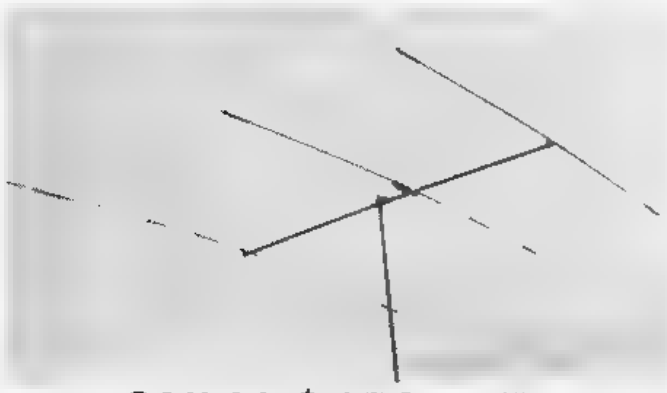
The stepping method average is 1/2 = 6, and this would give about 30 seconds for a five-letter word, or approximately two words a minute.

The Switch

A lot of programming attention has to be made to get correct switch operation. In the scanning mode, the pause period is made by a count loop of 1000, which takes about three seconds, and on reaching

Continued on Page 32

TET-Emtron
ANTENNA SYSTEMS



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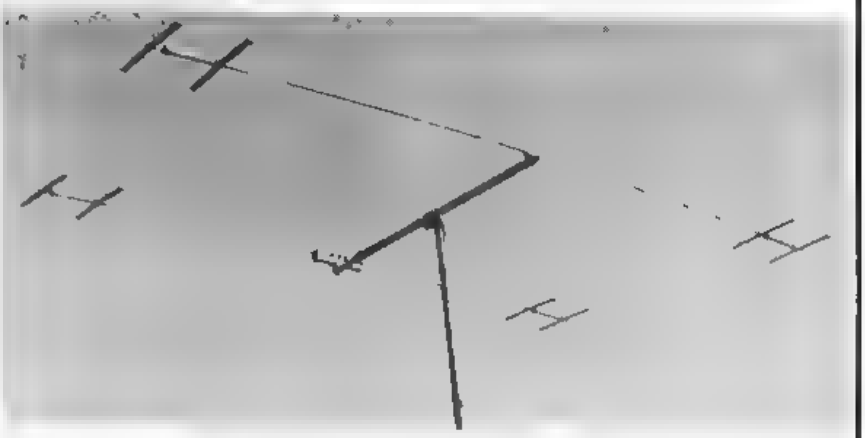
ELEMENT LENGTH 5 0m	BOOM LENGTH 2 0
GAIN 4/6/6 dB	FRONT TO BACK RATIO 12-20dB
FEED IMPEDANCE 50ohm	TURNING RADIUS 2 74m
WIND SURFACE 0 25m	WEIGHT 9 1kg

VSWR 21 28MHz less than 1 5 1 across band
14MHz 150 kHz less than 1 5 1
250 kHz less than 2 0 1



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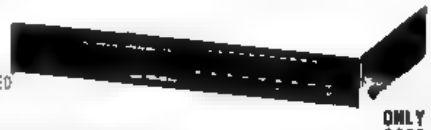

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New Frequencies for VNG

MARION LEIBA VK1VNG, VK1BNG HONORARY SECRETARY VNG USERS CONSORTIUM
26 FIMISTER CIRCUIT, KAMBAH ACT 2902

AUSTRALIA'S STANDARD frequency and time signal service has undergone frequency changes. VNG ceased broadcasting on 15MHz at 0700 UTC on 6 May 1991. The aerial was modified and the transmitter tuned for 16MHz, and transmission on this new frequency started at 0000 UTC on 8 May 1991. The alterations to the frequency synthesiser and antenna were made by the staff at Llandilo.

VNG has also been licensed on 8.638 and 12.984MHz. These are on loan from the Royal Australian Navy and we are very grateful. It must be remembered, however, that the Navy reserves the right to take back these frequencies at any time should it need them.

The 8.638 and 12.984MHz transmissions are both double sideband, but with the bandwidth restricted to 3kHz at the Navy's request. Also, because of the international spectrum allocations, VNG is not permitted to transmit voice on either frequency. Instead, the letters VNG are transmitted in slow morse six times a minute during the 15th, 30th, 45th and 60th minutes, with a frequency of approximately 400Hz. These are the minutes of the voice station identification on five and 16MHz. For those who don't know morse, VNG is "...— —. — —.".

The frequency synthesisers for 8.638 and 12.984MHz were built in the geology department of the University of Tasmania in Hobart by Vagn Jensen VK7VJ, the director of the Tasmanian seismograph network. Vagn also designed the synthesisers.

VNG started transmitting on 8.638 and 12.984MHz at 0006 UTC on 3 July 1991, and transmission on 10MHz ceased on 2 July 1991. On 3 July, VNG was also officially opened by the chairman of the National standards Commission, Professor Julian Goldsmid. About 50 people from government organisations and the VNG Users Consortium attended the ceremony. The aerial used for the 5MHz transmission is a Wells quadrant. The other frequencies are radiated from delta-matched quadrants with a single strand of wire on each arm. Recent reception reports have been received from overseas on the three higher frequencies, with particularly enthusiastic comments on the 16MHz transmissions which have been those most commonly reported from around the world. Reception of 5MHz outside Australia and New Zealand is rarely mentioned nowadays, though reports on this frequency were received in 1988-89 when it was VNG's only transmission.

VNG's transmission schedule is: 5.000MHz, 8.638MHz, 12.984MHz: continuous; 16.000MHz: 2200-1000 UTC.

Scenes from official opening of VNG in transmitter hall at Llandilo, 3 July 1991.

Vagn Jenson VK7VJ arriving Llandilo with the frequency synthesiser for 8.638 and 12.984MHz on 1 July 1991.

The power is: 5.000 and 8.638MHz: 10kW; 12.984MHz; 3kW; 16.000MHz; 5kW.

Location: International Transmitting Station, Civil Aviation Authority, Llandilo, New South Wales, Australia, 33 42 52 S, 150 47 33 E.

Transmitters: STC HF broadcast transmitters. The VNG transmitters and standard frequency and time signal equipment are owned by the National Standards Commission.

Emission: Double-sideband full-carrier amplitude modulation 5.000 and 16.000MHz: 6K00B9W; 8.638 and 12.984MHz: 3K00A1A.

Licensed Power: 5.000, 8.638 and 12.984MHz: 10.kW; 16.000MHz. 5kW.

Power in Use: 5.000 and 8.638MHz 6kW; 12.984MHz: 3kW, 16.000MHz: 5kW

Aerials: 5MHz is radiated from a Wells quadrant aerial. 8.638, 12.984 and 16MHz are radiated from delta-matched quadrant aerials with a single strand of wire on each arm.

Transmission Schedule: 5.000, 8.638, 12.984MHz: continuous; 16.000MHz: 2200-1000 UTC.

Frequency Loan: 8.638 and 12.984MHz are on loan from the Royal Australian Navy.

Voice Station Identification Announcement—Broadcast on 5 and 16MHz only: Given during the 15th, 30th, 45th and

Continued on Page 32

Australian VHF-UHF Records

Div	From	To	Date	Distance
6 METRE BAND			**50 - 54 MHz**	
SHORT PATH				
VK1	VK1RX	KP4A	06/04/91	16082.0
VK2	VK2JSR	FC1BYM	06/02/91	17184.4
VK3	VK3OT	G4UPS	19/02/91	16921.6
VK4	VK4AYX	DL3ZM/YV5	16/03/91	15582.0
VK5	VK5LP	P43AS	26/03/88	16116.0
VK6	VK6RO	GI6DYZ	26/02/90	14904.1
VK7	VK7IK	W4EQM	27/04/90	15343.0
VK8	**VK8RH**	**8R1AH**	**02/04/88**	**15857.9**
LONG PATH				
VK2	VK2BBR	6W1QC	02/03/91	21384.0
VK3	VK3OT	9Q5EE	06/04/91	27186.0
VK4	VK4BJE)			
	VK4KHZ)	6W1QC	02/03/91	21754.0
VK5	VK5JQ	TL8MB	03/04/91	26397.9
VK7	VK7IK	W4EQM	27/04/90	15343.0
DIG	VK2BBR	JH1WHS	26/04/91	7320.0
MOB	VK4ZAZ	FM5WD	06/04/91	16242.9
2 METRE BAND			**144 - 148 MHz**	
VK1	VK1VP	VK4ZSH	14/12/83	936.4
VK2	VK2ZRU	VK8AOM	13/12/86	2697.9
VK3	VK3YLR/3	VK6KZ/6	23/01/80	2784.2
VK4	**VK4BFO**	**JI7DMB**	**19/04/91**	**5783.0**
VK5	VK5ZEE	ZL1HH	15/01/88	3456.8
VK6	VK6KZ/6	VK3YLR/3	23/01/80	2784.2
VK7	VK7ZAH	VK4ZAZ	01/01/87	1910.0
VK8	VK4ZSH/8	JA7OXL	24/10/82	6480.9
EME	VK3AMZ	VE1BVL	22/06/91	17663.6
MOB	VK3KAJ/M	VK6BE	25/01/86	2224.5
DIG	VK3ZJC	VK3ZOB	28/11/90	266.6
70 cm BAND			**420 - 450 MHz**	
VK1	VK1VP	VK2ZPT	14/06/85	266.4
VK2	VK2ZAB	ZL1AKW	13/01/88	2299.8
VK3	**VK3ZBJ**	**VK6KZ/6**	**23/01/80**	**2715.9**
VK4	VK4ZSH/4	ZL2TPY	13/01/88	2401.9
VK5	VK5NY	VK7JG	21/05/85	995.0
VK8	VK8KZ/8	VK3ZBJ	23/01/80	2715.9

As at 6 January 1991
Abbreviations:
EME National EME records
ATV National ATV records
DIG Digital Modes records
MOB National mobile records
National records shown in bold type.

Div	From	To	Date	Distance
VK7	VK7JG	VK5NY	21/05/85	995.0
EME	VK6ZT	K2UYH	29/01/83	16726.4
ATV	VK3ZPA/T	VK7EM/T	13/12/72	413.0
MOB	VK3KAJ/M	VK6BE	25/01/86	2224.5
DIG	VK3ZJC	VK3ZOB	28/11/90	266.6
58 cm BAND			**575 - 585 MHz**	
VK2	VK4ZRF/2	VK4ZSH/4	11/12/81	255.4
VK3	VK3ZBJ	VK3KAJ/5	25/02/89	382.9
VK4	VK4ZRF/4	VK4ZSH/4	07/12/81	377.8
VK5	VK3KAJ/5	VK3ZBJ	25/02/89	382.9
VK6	VK6KZ/6	VK6HK	16/01/83	196.4
MOB	VK3KAJ/M	VK3ZBJ	26/02/89	122.5
23 cm BAND			**1240 - 1300 MHz**	
VK1	VK1VP/1	VK4ZSH/2	01/02/91	243.2
VK2	VK2BDN	ZL1AVZ	09/12/82	2132.7
VK3	VK3ZBJ	VK6WG	18/03/89	2449.3
VK4	AX4NO/4	AX4ZT/2	12/04/70	402.0
VK5	VK5MC	VK6KZ/6	23/01/80	2289.4
VK6	VK6WG	VK3ZBJ	18/03/89	2449.3
VK7	VK7ZAH	VK3AKC	17/02/71	439.0
EME	VK3AKC	W2NFA	09/10/73	16713.0
MOB	VK3KKW/M	VK3ZJC/M	16/09/89	137.6
13 cm BAND			**2300 - 2450 MHz**	
VK2	VK2ZAC/2	VK2BDN/2	19/05/73	159.9
VK3	VK3ZHP	VK7HL	12/01/85	427.3
VK5	VK5QR	VK6WG	17/02/78	1885.5

Div	From	To	Date	Distance
VK8	VK8WG	VK5QR	17/02/78	1885.5
VK7	VK7HL	VK3ZHP	12/01/85	427.3
ATV	VK3YTV/3	VK3ZBJ	26/01/91	117.8
9 cm BAND			**3300 - 3500 MHz**	
VK2	VK2AHC/2	VK2SB/2	16/01/77	114.1
VK3	VK3KAJ/3	VK3ZBJ	25/01/86	244.3
VK5	VK5QR	VK6WG	25/01/86	1885.5
VK6	VK6WG	VK5QR	23/01/88	1885.5
6 cm BAND			**5650 - 5850 MHz**	
VK1	VK4ZSH/1	VK1VP/2	13/06/90	86.6
VK2	VK4ZSH/2	VK4ZBW/4	29/04/90	144.3
VK3	VK4ZSH/3	VK3ZBJ	14/04/90	69.6
VK4	VK4ZSH/4	VK4ZBW/4	22/04/90	173.4
VK5	VK5NT	VK5ZO/5	12/11/89	178.4
3 cm BAND			**10 - 10.5 GHz**	
VK2	VK2AHC/2)	VK2SB/2)		
	VK2ZND/2)	12/04/75	114.1	
VK3	VK3KAJ/3	VK3ZBJ/3	06/02/86	252.1
VK4	VK4ZNC/4	VK4ZSH/4	09/11/81	170.8
VK5	VK5NT/5	VK5ZO/5	10/06/90	214.8

NOTES
VK2AHC is now VK5ZO; VK3YLR is now VK3KAQ; VK3ZPA is now VK3KAU; VK3AKC: R. Wilkinson (deceased); VK2BDN: R. Norman (deceased);
VK7ZAH: K. Hendricks (deceased).

TO APPLY FOR A RECORD

Details required are: date, time, frequency, mode, signals reports, and some details of equipment used. Original QSL cards may be supplied, or certified copies. Station locations MUST be in degrees, minutes, and seconds, or marked clearly on "flat-map" 1:100,000 or lighter scale maps. All maps, QSL cards etc. will be returned to the claimants.

Send applications to the Chairman, Federal Technical Advisory Committee, PO Box 300, Caulfield South, Vic 3162.

Australian Beacons

Freq	Call	Serv Area	Loc	ST	Notes
HF Bands					
3.699	VK2RCW	Sydney	QF56	O	(1)
28.260	VK5WI	Adelaide	PF95	O	
28.262	VK2RSY	Sydney	QF56	O	
28.264	VK6RWA	Perth	OF78	O	
28.265	VK4RIK	Cairns	QH23	O	
28.266	VK6RTW	Albany	OF84	O	
28.268	VK8VF	Darwin	PH57	O	
28.270	VK4RTL	Townsville	QH30	O	
6 Metre Band					
50.043	VK8RAS	Alice Sp	PG66	?	(3)
50.0535	VK3SIX	Warrnon	QF02	O	
50.056	VK8VF	Darwin	PH57	O	
50.057	VK7RSB	Hobart	QE37	O	
50.066	VK6RPR	Perth	OF78	O	
50.0775	VK4BRG	Sarina	QG46	O	
52.200	VK8VF	Darwin	PH57	O	
52.300	VK2RBH	Broken Hill	QF06	P	
52.320	VK6RTT	Wickham	OG89	O	
52.325	VK2RHV	Newcastle	QF57	O	
52.330	VK3RGL	Geelong	QF22	O	
52.345	VK4ABP	Longreach	QG26	O	
52.350	VK6RTU	Kalgoorlie	PF09	L	
52.370	VK7RST	Hobart	QE37	O	
52.410	VK1RCC	Canberra	QF44	P	
52.420	VK2RSY	Sydney	QF56	O	
52.425	VK2RGB	Gunnedah	QF59	O	
52.435	VK3RMV	Hamilton	QF12	?	
52.440	VK4RTL	Townsville	QH30	O	
52.445	VK4RIK	Cairns	QH23	O	
52.445	VK4RBM	Mackay	QG46	T	
52.450	VK5VF	Adelaide	PF95	O	
52.460	VK6RPH	Perth	OF78	O	
52.465	VK6RTW	Albany	OF84	O	
52.470	VK7RNT	Launceston	QE38	O	

Please advise any additions or corrections to the Chairman, WIA Federal Technical Advisory Committee, PO Box 300, Caulfield South, Vic 3162.

Freq	Call	Serv Area	Loc	ST	Notes
52.485	VK8RAS	Alice Sp	PG66	O	(3)
2 Metre Band					
144.022	VK6RBS	Busselton	OF76	O	
144.400	VK4RTT	Twmba	QG62	O	
144.410	VK1RCC	Canberra	QF44	O	
144.420	VK2RSY	Sydney	QF56	O	
144.430	VK3RTG	Melbourne	QF22	O	
144.435	VK3RMV	Hamilton	QF12	?	
144.445	VK4RIK	Cairns	QH23	O	
144.445	VK4RTL	Townsville	QH30	O	
144.445	VK4RBM	Mackay	QG46	T	
144.650	VK6RTU	Kalgoorlie	PF09	O	
144.450	VK5VF	Adelaide	PF95	P	(4)
144.465	VK6RTW	Albany	OF84	O	
144.470	VK7RMC	Launceston	QE38	O	
144.480	VK8VF	Darwin	PH57	O	
144.485	VK8RAS	Alice Spr	PG66	O	
144.530	VK3RGG	Geelong	QF22	?	
144.535	VK3RGI	Gippsland		L	
144.550	VK5RSE	Mt Gambi	QF02	O	
144.600	VK6RTT	Wickham	OG89	?	
144.800	VK5VF	Adelaide	PF95	O	(4)
144.950	VK2RCW	Sydney	QF56	O	(2)
144.950	VK3RCW	Melbourne	QF22	O	(2)
145.000	VK6RPH	Perth	OF78	O	
70 cm and Higher Bands					
432.066	VK6RBS	Busselton	OF76	?	
432.160	VK6RPR	Perth	OF78	O	

Freq	Call	Serv Area	Loc	ST	Notes
432.410	VK1RBC	Canberra	QF44	O	
432.410	VK6RTT	Wickham	OG89	?	
432.420	VK2RSY	Sydney	QF56	O	
432.430	VK3RTG	Melbourne	QF22	L	
432.435	VK3RMV	Hamilton	QF12	?	
432.440	VK4RSD	Brisbane	QG62	O	
432.445	VK4RIK	Cairns	QH23	O	
432.445	VK4RTL	Townsville	QH30	O	
432.445	VK4RBM	Mackay	QG46	T	
432.450	VK3RAI	Melbourne	QF22	O	
432.465	VK6RTW	Albany	OF84	?	
432.480	VK8R??	Darwin	PH57	P	
432.530	VK3RGL	Geelong	QF22	T	
432.535	VK3RMB	Ballarat	QF12	O	
432.545	VK4RAR	Rockton	QG56	O	
432.565	VK8RTU	Kalgoorlie	PF09	?	
1296.196	VK6RBS	Busselton	OF76	O	
1296.410	VK1RBC	Canberra	QF44	O	
1296.420	VK2RSY	Sydney	QF56	O	
1296.440	VK4RSD	Brisbane	QG62	O	
1296.445	VK4RIK	Cairns	QH23	O	
1296.480	VK8RPR	Perth	OF78	O	
2304.420	VK2RSY	Sydney	QF56	P	
2304.445	VK4RIK	Cairns	QH23	O	
2306.440	VK4RSD	Brisbane	QG62	O	
10300.0	VK6RUF	Perth	OF78	?	
10368.0	VK3RGZ	Melbourne	QF22	T	
10445.0	VK4RIK	Cairns	QH23	O	

Notes:
(1) CW practice beacons.
(2) CW practice beacons - FM mode.
(3) To move from 52.485 to 50.043.
(4) To move from 144.800 to 144.450.

List of Acronyms

Amendments and Additions

Many letter combinations have been used in *Amateur Radio* and elsewhere for many years, sometimes without explanation. To disperse the fog, we published a list in February 1991 (pp27-32). It contained a few errors and also left out some well-known acronyms. You may like to update your original list by inserting the following alterations.

Amend 1991 list as follows:

AARPC	"Postcode" not "Postcote"
ARCOT	The word "Club" has been omitted (after "Radio")
B-MAC	"Satellite" not "satteilte"
CGA	"Graphics" not "Graphic"
JMFD	"John" not "Joyn"
MF	"MHz" not "Mhz"
PCA	"Closed" not "Closeo"
RED	Should be REF
SECAM	"Memoire" not "Memorie"
SELCAL	Delete last L (ie not SELCALL)
SRJ	"Sarex" not "Saver"
TRAC	Close bracket after "Turkey"
UTC	"Universal" not "Universel"

Add to 1991 list as follows

AOC	after "Air Officer Commanding" add "Aeronautical Operational Control"
ATC	Air Traffic Control (after ASEAN)
DME	Distance Measuring Equipment (after DMA)
EBU	European Broadcasting Union (after EARS)
GPS	Global Positioning System (after GOES)
ICAO	International Civil Aviation Organisation (after IC)
MORC	Moorabbin & District Radio Club (after MCW)
PROM	Programmable read only memory (after PNGARS)
SARL	add "(also Sarawak)"
SARSAT	Satellite Aided Rescue Satellite (after SARL)
TVRO	Television Receive Only (after TVI)
TWT	Travelling Wave Tube
VOR	VHF Omnidirectional Range (after VOA)

Stolen Equipment Register

The Stolen Equipment Register is one of many services offered to members by the Wireless Institute of Australia. It has now been in operation since 1980, and is maintained on a computer database in the Executive Office. At regular intervals, updates of the complete list, sorted into categories of: Equipment Manufacturer/Model, Owner, Date Stolen are distributed to each Division. Members wanting to take advantage of the register, either to publicise the theft of their equipment or to check equipment they are about to purchase, may contact their Division, or write or telephone the Executive Office. Any telephone reports of stolen equipment must be followed immediately by written confirmation of the details. For maximum efficiency, these details should include: Manufacturer's name; model; type of equipment; serial number; date stolen; owner's name, address and callsign; any distinguishing features or modifications; police contact (if any). When equipment is recovered, it is important that you advise the Executive Office as soon as practicable. This list is the most up-to-date information we have at the time of going to press, but is based entirely on information received from you, the member. Would all readers please check this list and immediately advise if there are any amendments.

MFR	MODEL	DESCRIPTION	SERIAL NUMBER	OWNER	DATE STOLEN	COMMENT
AEA	PAKRATT	MULTIMODE TNC	19092	VK3XBE	28.07.91	
ALINCO	ALD24T	2M/70CM MOBILE RIG	10107310	VK2TPH	21.01.91	DIPLEXER FITTED 2 ANTENNA CABLES
AZDEN	PCS-3000	2M FM MOBILE	36736	VK2KCV	01.06.87	NO MICROPHONE - NO BRACKET
BELCON	LS-202E	2M M/MODE H/HELD	401992	VK3YYD	07.11.90	-
BWD	804	DC-10MHZ SCOPE	51787	VK2ZOW	11.01.90	
COMMODORE	1541 II	DISK DRIVE		VK5ALE	03.04.91	ENGRAVED L.E.P.A.R.C.
	64	COMPUTER		VK5ALE	03.04.91	ENGRAVED L.E.P.A.R.C.
DAIWA	2M 70 CM	CROSSNEEDLE SWR MTR		VK3XBE	28.07.91	
	CN-620A	SWR/POWER METER	-	VK2DQP	16.09.91	
	CNW-419	ANTENNA TUNER		VK3XBE	28.07.91	
DICK SMITH		AUDIO GENERATOR		VK2XJC	15.05.85	-
	EXPLORER	70CM FM TRANSCEIVER		VK2KUR	24.09.84	EXTENSIVE MODIFICATIONS
	T-2000	SOLDERING STATION	-	VK2DQP	16.09.91	
DRAKE	TR-7	HF TRANSCEIVER	2333	VK2AML	16.05.90	OWNERS NAMES ENGRAVED
DRESSLER	EVV2000	2M PRE-AMP	1027	VK2XJC	15.05.85	-
ELECTROPHONE	TX470T	UHF TRANSCEIVER	50800672	VK5ZPL	11.04.87	-
EMTRONICS		NOISE BRIDGE	EM342	VK4AAE	27.10.89	-
GALAXY	5	HF TRANSCEIVER	5872V2118	VK3UB	06.06.87	REMOTE VFO
	5	HF TRANSCEIVER	5503V1308	VK3UB	06.06.87	REMOTE VFO
GCOL	GV-16	2 M FM HANDHELD		VK3JOO	17.11.89	WITH ANTENNA
GME	TX472S	40 CH UHF T/CEIVER	912 48058	VK3KLF	14.06.90	-
	TX830	40 CH AM CB	8770556	VK4IS	15.06.90	-
GOODWILL	GFC8055F	DIGITAL FREQ COUNTER	2020452	VK2IT	07.06.91	
HOME BREW	-	ANTENNA TUNING UNIT	-	VK2DQP	16.09.91	
	-	ELECTRON MORSE KEYER	-	VK2DQP	16.09.91	
ICOM	HM4G	SPEAKER MIC	-	VK5ZGB	16.12.89	-
	IC02A	2M FM HANDHELD	23186	VK2FZH	09.06.89	WITH BP3 AND BC25E
	IC02A	2 M FM HANDHELD	29906249	VK5ZGB	16.12.89	-
	IC02AT	2 M HAND HELD	408070630	VK2OG	06.10.91	
	IC044	70 CM FM HANDHELD	-	VK5ZGB	16.12.89	-
	IC1271A		001398	VK3XBE	28.07.91	
	IC202	2M SSB TRANSCEIVER	5144	VK4ZSH	03.09.85	-
	IC202	2M SSB TRANSCEIVER	03482	VK3ZJY	11.06.87	-
	IC202	2M SSB TRANSCEIVER	41013816	VK3ZBI	01.10.85	-
	IC211	2M M/MODE T/CEIVER	6804309	VK3BRV	17.10.84	-
	IC211	2 M TRANSCEIVER	-	VK2IT	07.06.91	WITH MICROPHONE
	IC215	2M FM PORT T/CEIVER	05156	VK2AMX	20.11.84	-
	IC22	2M FM TRANSCEIVER	12266	VK3BLC	29.04.85	-
	IC22	2M FM TRANSCEIVER	12457	VK1TR	06.02.90	NO POWER PLUG/DIAL LAMP UNUSUAL
	IC22	2M FM TRANSCEIVER	10918	VK3XD	06.02.90	-
	IC22A	2M FM TRANSCEIVER	FALLEN OFF	VK3YV	21.06.87	EARLY MODEL - 22 CHANNELS
	IC22A	2M FM TRANSCEIVER	6653	VK3ZU	03.05.84	-
	IC22A	2M FM TRANSCEIVER	3402112	VK2ZIG	01.07.87	-
	IC22A	2M FM TRANSCEIVER	1914	VK4ZSH	03.09.85	-
	IC22S	2M FM TRANSCEIVER	11912	VK2ETJ	06.03.88	PRE-AMP, SOCKET
	IC22S	2M FM TRANSCEIVER	14957	VK3DYZ	11.09.84	-
	IC22S	2M FM TRANSCEIVER	07570	VK3KJA	14.12.87	DIGITAL READOUT
	IC22S	2M FM TRANSCEIVER	15674	VK2CIB	11.02.89	-
	IC22S	2M FM TRANSCEIVER	14727	VK3ME	14.08.85	-
	IC255A	VHF TRANSCEIVER	10306425	VK3KLF	14.06.90	-
	IC25A	2M FM TRANSCEIVER	03831	VK2DPM	04.11.84	VFO MODIFIED
	IC271A	2M ALL MODE TRCVER	27402603	VK3XBE	28.07.91	
	IC280	TRANSCEIVER	02592	VK2BVW	30.03.88	-
	IC290A	ALL MODE TRANSCEIVER	001532	VK3YFA	01.11.90	-
	IC290H	ALL MODE TRANSCEIVER	17701965	VK3ZBI	01.10.85	-
	IC290H	ALL MODE TRANSCEIVER	17703342	EMTRONICS	17.02.86	
	IC2A	2M FM HANDHELD	04484	VK1MX	21.01.85	VINYL CASE
	IC2A	2M FM HANDHELD	12213837	VK5ABY	22.12.88	
	IC2A	2M FM HANDHELD	12209700	VK2AHF	06.09.87	

	IC2A	2M FM HANDHELD	12213830	VK3YOD	02.12.83	SPARE BATTERY PACK
	IC2A	2M FM HANDHELD	29901052	VK2CKD	05.02.86	-
	IC2GAT	2M FM HANDHELD	08616	VK3JDO	17.11.89	WITH BP70, BC36, BPSA X 2
	IC3200	2M/70CM TRANSCEIVER	01046	VK2CIM	02.08.87	-
	IC45A	70CM FM TRANSCEIVER	18351005	VK3KJC	22.02.84	MEMORY BACKUP UNIT
	IC45A	70CM FM TRANSCEIVER	01876	VK2DPM	04.11.84	
	IC471A	70 CM TRANSCEIVER	20801900	VK3XBE	28.07.91	
	IC490A	70CM TRANSCEIVER	18101192	VK3BVO	01.03.83	-
	IC4E	70CM H/H TRANSCEIVER	18103021	VK3YOD	02.12.83	SPARE BATTERY PACK
	IC4E	70CM H/H TRANSCEIVER		VK2KZZ	16.06.87	CALLSIGN ENGRAVED
	IC502	6M SSB TRANSCEIVER	00618	VK3ZJY	11.08.87	-
	IC551	6M ALL MODE T/CEIVER	01273	VK4ZSH	03.09.85	INCLUDING FM, VOX
	IC551	6M ALL MODE T/CEIVER	8401253	VK3ZBI	01.10.85	-
	IC551D	6M TRANSCEIVER	99003678	VK3YSG	01.01.84	-
	IC560	6M TRANSCEIVER	01153	VK3MT	01.02.90	ENGRAVED SECURITY NO. T-00510
	IC560	6 M TRANSCEIVER	02057	VK2IT	07.08.91	WITH MICROPHONE
	IC701	HF TRANSCEIVER	8001039	VK2???	15.02.88	-
	IC701PS	POWER SUPPLY	7800978	VK2???	15.02.88	-
	IC720A	HF TRANSCEIVER	08242	VK4ZSH	03.09.85	-
	IC721	HF TRANSCEIVER	008883	A. WOJNAR	02.07.90	TRANSCEIVES ALL RFDS FREQUENCIES
	IC730	HF TRANSCEIVER	13808798	MELB UNIV	16.09.85	HOME BREW POWER SUPPLY
	IC735	HF TRANSCEIVER	36304455	EMTRONICS	17.02.88	-
	IC745	HF TRANSCEIVER		VK3XBE	28.07.91	
	ICPS20	POWER SUPPLY	10101966	VK3YSG	01.01.84	-
	ICR70	COMMS RECEIVER	18503539	VK3XBE	28.07.91	
	ICR7000	COMMS RECEIVER	002670	VK3XBE	28.07.91	
	PS30	POWER SUPPLY	20302017	VK3XBE	28.07.91	
	SM8	DESK MICROPHONE	20507750	VK3XBE	28.07.91	
KDK	2025 MK II	2M TRANSCEIVER		VK2ETJ	06.03.88	DEFUNCT FINAL
	FM2025 MK 2	2M FM TRANSCEIVER	A5020	VK2AML	03.07.88	SHARPE MICROPHONE
	MULTI 7	2M HANDHELD		VK2TJB	09.02.88	DRIVERS LICENCE NO. ENGRAVED
KENWOOD	309 VFO	VFO TO SUIT TR7200G	440168	VK5ALE	03.04.91	
	AT180	ANTENNA TUNER	0020450	VK2???	11.11.87	-
	AT200	ANTENNA TUNER	820049	VK2DCB	16.06.84	-
	DG5	DIGITAL DISPLAY	730475	VK2DCB	16.06.84	-
	DM81	GRID DIP OSCILLATOR	4020163	VK2KLF	10.06.89	STENCILLED IN 20MM BRIGHT YELLOW
	LF-30A	LOW PASS FILTER	-	VK2ADP	16.09.91	
	MC 50	MICROPHONE	-	VK2DOP	16.09.91	
	MC-50	DESK MICROPHONE	N/A	VK5ABY	22.12.88	-
	MS1	MOBILE MOUNT	-	VK5BJA	30.05.89	-
	PS430	POWER SUPPLY		VK3CLV	16.12.91	
	SMC/3C	H/HELD MIC & SPEAKER	-	VK2PRK	25.07.91	
	SP520	SPEAKER		VK2DCB	16.06.84	-
	TM201B	VHF TRANSCEIVER	7011611E	VK3CLV	16.12.91	
	TM221A	2M FM TRANSCEIVER	8110722	VK2CCD	09.04.88	-
	TM221A	2M FM TRANSCEIVER	8022541	VK3ZJY	11.08.87	-
	TM231A	2M FM TRANSCEIVER	0051016	VK4IS	27.07.90	-
	TM441A	432 MHZ FM TRANSC	6010370	VK4IS	27.07.90	-
	TR2400	2M FM HANDHELD	0061950	VK2DPM	28.06.84	-
	TR2400	2M FM HANDHELD	0061926	VK2PJ	20.04.85	CALLSIGN ENGRAVED
	TR2500	2M FM HANDHELD	3040009	VK2ZOC	29.05.85	MICROPHONE AND CHARGER
	TR2500	2M FM HANDHELD	3033045	VK2DYW	18.02.87	-
	TR2600A	2M HANDHELD	7030631	VK5AAR	03.10.88	-
	TR2600A	2M HANDHELD TCVER	5060934	VK2KLF	10.06.89	MISSING HAND STRAP
	TR2600A	2M HANDHELD	5060895	VK5BJA	30.05.89	INCLUDING RUBBER DUCK ANTENNA
	TR7200G	2M TRANSCEIVER	111048	VK5ALE	03.04.91	
	TR751A	2M ALL MODE T/CEIVER	7050512	VK3KMJ	25.02.90	GREY MIC - DCL MODEM BOARD
	TR7850	2M FM H/HELD T/CEIVR	202060	VK2DED	06.03.84	"N" CONNECTOR
	TR7850	2M FM H/HELD T/CEIVR	M 2020561	VK2ALK	22.10.88	-
	TR7850	2M FM H/HELD T/CEIVR	1111125	VK2CCK	07.02.88	-
	TR7850	2M FM TRANSCEIVER	4010747	VK2TVG	06.06.85	-
	TR9000	2M ALL MODE T/CEIVER	1020527	VK2KAH	03.01.87	ADDITIONAL MEMORY SWITCH
	TR9000	2M ALL MODE T/CEIVER	1050780	VK3YSG	01.01.84	-
	TS120S	HF TRANSCEIVER	950619	VK2???	11.11.87	-
	TS120V	HF TRANSCEIVER	0081224600	VK2VWN	03.05.85	MT36 MICROPHONE
	TS130S	HF SSB TRANSCEIVER	1090168	VK5ABY	22.12.88	-
	TS130S	HF TRANSCEIVER	40401C8	VK2BVW	30.03.88	-
	TS130SE	HF TRANSCEIVER	2080897	VK2KAH	03.01.87	-
	TS430S	HF TRANSCEIVER	4010322	VK2XJC	15.05.85	INCLUDING FM, FILTER
	TS440S	HF TRANSCEIVER	0060078	VK2FIT	01.07.90	-
	TS440S	HF TRANSCEIVER	7090271	VK2FIT	24.10.89	WITH PS50 PSU & MC85 DESK MIC
	TS440S	HF TRANSCEIVER	0101192	VK3NRG	14.10.90	STOLEN FROM VEHICLE IN PERTH
	TS440S		7031310	VK6ID	25.08.91	
	TS440S	HF TRANSCEIVER	R 7060009	VK3CLV	16.12.91	SP40 SP50 EXTERNAL SPEAKERS
	TS520	HF TRANSCEIVER	010296	VK2ZOW	11.01.90	-
	TS520S	HF TRANSCEIVER	820972	VK2DCB	16.06.84	-
	TS520S	HF TRANSCEIVER	?	VK2FZH	09.06.89	STICKER FROM "TURKEY RADIO"
	TS520SE	HF TRANSCEIVER	8850	VK5ALE	03.04.91	
	TS870	6M & HF TRANSCEIVER	?	VK2ZXC	28.06.90	-
	TS700A	2M ALL MODE T/CEIVER	360409	VK3ZJY	11.08.87	-
	TS930S	HF TRANSCEIVER	3050176	VK7JG	13.01.83	-
	TV506	6M CONVERTER	720089	VK2ZOW	11.01.90	-
	VFO520	EXTERNAL VFO		VK2DCB	16.06.84	-
KING AIR	AIRCRAFT BAN	TRANSCEIVER		VK6ID	25.08.91	
KYOKUTO	FM144	VHF FM TRANSCEIVER	8296	VK2ZOW	11.01.90	-
KYOTO	FM144-10	2M FM TRANSCEIVER	5027	VK2KUR	24.09.84	CALLSIGN ENGRAVED
LEADER	LSG11	SIGNAL GENERATOR	0041244	VK3KJA	14.12.87	-
	LSG16	SIGNAL GENERATOR	1081096	VK3YSG	01.01.84	MISC BITS ALSO
M/WAVE MODULE	MML-432-50	70 CM 50W AMPLIFIER		VK3XBE	28.07.91	
MICROWAVE	40W-144 MHZ	2M LINEAR AMPLIFIER	-	VK2ZOW	11.01.90	-
MIRAGE		2M 150W AMPLIFIER		VK3XBE	28.07.91	
		2M 60W AMPLIFIER		VK3XBE	28.07.91	
PACCOM	DR200	DUAL PORT TNC	2231	VK2RDX	27.05.91	RELAY IN BOX IN DC SUPPLY LINE
PACCOMM	TINY 2	TNC	T5359	VK5ALE	03.04.91	WITH MANUAL
PHILIPS	323	UHF CB HANDHELD		VK6ID	25.08.91	2 OFF CH 17 AND 20
	FM321	70CM FM TRANSCEIVER	156	VK2IT	07.08.91	WITH MICROPHONE
	SXA	UHF CB HANDHELD		VK6ID	25.08.91	2 OFF CH 17 AND 20
PHILLIPS	828	2M FM TRANSCEIVER	44982	VK4IS	15.08.90	10 CHANNELS - 3 FITTED
	FM828	VHF TRANSCEIVER		VK5ALE	03.04.91	1 CHANNEL 147.575
PRESIDENT	HR2510	AM TX MOD FOR CB	95000177	F CARMICHAEL	05.91.00	SCRATCHES/NO POWER CORD
REALISTIC		SCANNING RECEIVER		VK6ID	25.08.91	BNC SOCKET
	AX190	HF RECEIVER	500111	VK3KJA	14.12.87	-
	SP190	SPEAKER ENCLOSURE	20-5191	VK3KJA	14.12.87	-
REGENCY	HX2000	HANDHELD		DSE VIC	13.05.85	
SAIKO	SC7000	SCANNER		VK2XJC	15.05.85	BNC ANTENNA SOCKET
SONY	2001D	COMMUNICATIONS RECVR	?	VK2FZH	09.06.89	BROKEN ANTENNA
STANDARD	C520	2M & 70 CM HANDHELD	F140829	ANDREWS COMM	16.02.90	STOLEN AT GOSFORD FIELD DAY
STC	MT36	SWR BRIDGE		VK2RDX	27.05.91	
	MTR25 191B	VHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
	MTR25 191D	UHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
SWAN	MB40	40 M MOBILE TCEIVER	16471	VK2IT	07.08.91	
TELEQUIPT	551	OSCILLOSCOPE		VK4AAE	27.10.89	-

TEMPO	1S	2M HANDHELD	012240	VK3UB	06.08.87	-
THORN		B&W TV	107512	VK2XJC	15.05.85	MOD FOR COMPUTER
TOKYO	HL160V	2M POWER AMPLIFIER	829331	VK2XJC	15.05.85	-
	HL86V	6M POWER AMPLIFIER	819595	VK2XJC	15.05.85	-
	HL90U	70CM POWER AMP	8304246	VK2XJC	15.05.85	-
TONO	THETA 550	KEYBOARD TERMINAL	821485	VK3XBE	28.07.91	
TRIO	CS1560A2	CRO	TD-20171	VK3YSG	01.01.84	-
UNIDEN	2020	HF TRANSCEIVER	50808009	VK2KSY	16.09.85	-
VIBROPLEX	-	MORSE KEY	-	VK2DQP	16.09.91	
WELZ	SP200	SWR/PWR METER	600364	VK2XJC	15.05.85	-
YAESU	FAS14R	REMOTE ANT SEL	140139	VK3KJA	14.12.87	-
	FC707	ANTENNA TUNER	11140775	VK2DBB	28.04.86	-
	FC707	ANTENNA TUNER	1N180285	VK4AAE	27 10.89	-
	FC707	ANTENNA TUNER	11140765	VK3DHV	01.06.87	-
	FC707	ANTENNA TUNER	1L170088	VK2CFC	06.09.91	
	FL2010	2M LINEAR AMPLIFIER	1L031300	VK3DKO	25.08.88	MOUNTED IN CRADLE
	FP707	POWER SUPPLY	4C050487	VK4AAE	27.10.89	-
	FP707	12V 20 AMP P/SUPPLY	1H120546	VK5ABY	22.12.88	-
	FP707	POWER SUPPLY	1L150598	VK2CFC	06.09.91	
	FRA7700	ACTIVE ANTENNA	2H050293	VK2???	11.11.87	-
	FRG7	HF RECEIVER	298L20099	VK3ZLY	28.07.83	-
	FRG7	HF RECEIVER	8H-210662	VK2IT	07.08.91	
	FRG7700	RECEIVER	2K210752	VK2???	11.11.87	-
	FRG7700	RECEIVER	3M260983	VK2XPU	01.08.89	-
	FRG9600	SCANNING RECEIVER	5 N 120767	DICK SMITH	01.11.91	STOLEN FROM BENDIGO VIC STORE
	FRT7700	ANTENNA TUNER	2K070479	VK2???	11 11.87	-
	FT101B	HF TRANSCEIVER	83L102373	VK3KJA	14.12.87	-
	FT101B	HF TRANSCEIVER	320376	VK2IT	07.08.91	WITH DESK MICROPHONE
	FT101E	HF TRANSCEIVER	8G350263	VK2SS	29.08.84	-
	FT101E	HF TRANSCEIVER	7K301042	VK5EZ	08.07.89	-
	FT101E	HF TRANSCEIVER	8L370414	VK3DYZ	11.09.84	-
	FT101E	HF TRANSCEIVER	8J361432	VK2DQP	16.09.91	
	FT102	HF TRANSCEIVER	3K090835	VK2FLM	23.12.90	ENGRAVED NO 862075 YM-36 MIC
	FT107M	HF TRANSCEIVER	1I110012	VK2ALN	03.03.87	-
	FT200	HF TRANSCEIVER	2K332252	VK3DYZ	11.09.84	-
	FT207R	2M HANDHELD	1D132704	VK2ETJ	06.03.88	-
	FT207R	2M FM HANDHELD	10132725	VK2EMC	04.03.85	BATTERY COVER MISSING
	FT208R	2M FM HANDHELD	3N350864	VK2CBA	30.07.85	-
	FT208R	2M FM HANDHELD	4E362078	VK2PJ	29.03.89	FAULTY VCO
	FT208R	2M HANDHELD TRCVR		VK3XBE	28.07.91	
	FT209R	2M FM HANDHELD	4L06245	DSE VIC	13.05.85	-
	FT209RH	2M FM HANDHELD	4K050838	VK3CE	01.01.85	BLUE VINYL CASE
	FT209RH	2M FM HANDHELD	5K190401	VK2HW	21.02.86	LEATHER CASE
	FT212RH	2 M TRANSCEIVER	IC830020	VK2XMM	01.07.91	
	FT224		8G307290	VK3OV	28.05.87	-
	FT230	2M FM TRANSCEIVER		VK2EQD	18.08.87	-
	FT230R	2M FM TRANSCEIVER	4H081794	DSE VIC	13.05.85	-
	FT23R	2M FM HANDHELD	OD071763	DSE BOX HILL	16.09.91	
	FT290R	2M FM TRANSCEIVER	2D100942	VK3DKO	25.08.86	CALLSIGN ENGRAVED
	FT290R	2M FM TRANSCEIVER	5G450016	VK7HW	16.04.86	MOBILE BRACKET
	FT290R	2M FM TRANSCEIVER	4E360554	VK3KGH	01.08.86	VINYL CASE
	FT290R	2M FM TRANSCEIVER	3C260713	VK2EGD	12.11.86	-
	FT290R	2M FM TRANSCEIVER	1L081321	VK3KJC	22.02.84	-
	FT290R	2M FM TRANSCEIVER	SF 260702	VK4AAE	27.10.89	COMPLETE WITH NICADS
	FT290R	2M FM TRANSCEIVER	1M081340	VK2VE	04.01.87	OWNERS NAME
	FT470	DUAL BAND HAND HELD	9L150788	DICK SMITH	31.08.90	STOLEN FROM BOURKE ST MELB STORE
	FT4700RH	VHF/UHF TRANSCEIVER	9C212240	VK3EMJ	16.07.91	NO MICROPHONE OR POWER LEAD
	FT480R	2M ALL MODE T/CEIVER	1H12069	VK1ZUR	29.05.84	-
	FT620	6M TRANSCEIVER	010489	VK4ZSH	03.09.85	-
	FT680R	HF TRANSCEIVER	3H080202	VK2XJC	15.05.85	-
	FT7	HF TRANSCEIVER	8K110946	VK2IV	04.11.86	DIAL ILLUMINATION MODIFICATION
	FT7	HF TRANSCEIVER	8I090728	VK2KSY	16.09.85	-
	FT7	HF TRANSCEIVER	81090639	VK3BYK	28.06.83	-
	FT7	HF TRANSCEIVER	-	VK2PPK	25.07.91	ID "NSW 718810" ENGRAVED ON BACK
	FT707	HF TRANSCEIVER	-	VK4AAE	27.10.89	-
	FT707	HF TRANSCEIVER	1D161414	VK3DHV	01.06.87	-
	FT708R	70CMS FM HANDHELD	2J161463	VK2PJ	29.03.89	-
	FT708R	70CM FM HANDHELD	1H010948	VK2PJ	20.04.85	CALLSIGN ENGRAVED
	FT757GX	T/CVR & YM36 MIC	3N040371	VK2DBB	28.04.86	CALL SIGN ENGRAVED
	FT757GX	HF TRANSCEIVER	4J121785	VK2CFC	06.09.91	RF AMP NOISY - REQUIRES SERVICE
	FT780R	70CM TRANSCEIVER	1J061616	VK3ZBI	01 10.85	-
	FT780R	70CM TRANSCEIVER	3F070521	VK2XJC	15.05.85	-
	FV101	EXTERNAL VFO	1E353	VK3KJA	14.12.87	-
	FV707DM	EXTERNAL DIGITAL VFO	0L080097	VK4AAE	27.10.89	-
	Y901P	MONITORSCOPE	9L030072	VK1ZVR	15.12.84	INCLUDING MODULES
	YC355D	200MHZ FREQ COUNTER	-	VK2ZCW	11.01.90	-
	YP150	DUMMY LOAD/PWR METER		VK3DBE	28.07.91	
	YP150	DUMMY LOAD	81090469	VK2DCB	16.08.84	-

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Band Plans

HF band plans are as in the 1992 Australian Radio Amateur Call Book. VHF band Plans have minor changes due to adoption of new 50 MHz beacon policy last October.

On 50 MHz, beacon frequencies within the DX window (50.05 - 50.200 MHz) are reserved for use within the eastern states. Beacons in VK5, VK6 and VK8 may operate below 50.05 MHz, or in the beacon segment beginning at 50.250 MHz. At 50 MHz, beacon spacing may be as close as 1 kHz. See *AR* December 1991 pp 45 - 46.

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Australia Repeater Listing

This list has been updated with information supplied by Divisions, repeater groups and individuals. Please send any additions or corrections to the Chairman, WIA Federal Technical Advisory Committee, PO Box 300, Caulfield South, Vic 3162.

LEGEND:

Status:	O	operating	T	testing	P	planned	? unknown
	A	licence application pending			L	licensed but not currently on air	
ERP:	Effective radiated power (watts)			HASL:	Height above sea level (metres)		
T/O:	Timeout in minutes				SP:	Sponsor or licensee	
Note:	See footnotes at the end of the listing.						

Voice Repeaters - 10 Metre Band

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
29.620	29.520	VK2RUW	Wollongong	O	50	771	5.0	NIL
29.620	29.520	VK5RLZ	Adelaide	L	50	62		SEL
29.640	29.540	VK3RHF	Melbourne	O		600	2.5	VTF(15)
29.660	29.560	VK4RCC	NW Brisbane	P	10		3.0	QCG(27)
29.680	29.580	VK6RHF	Perth	P				WRG

Voice Repeaters - 6 Metre Band

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
New South Wales								
53.550	52.550	VK2RAY	Albury	P				NTC
53.550	52.550	VK2RIC	Lismore-Casino	P				NSU
53.550	52.550	VK2RSJ	Sydney West	A				NSJ
53.575	52.575	VK2RJB	Illawarra	P				NJB
53.575	52.575	VK2RTM	Tamworth	P				NTM
53.625	52.625	VK2RSN	Newcastle	O		400		NAU
53.675	52.675	VK2RMB	Sydney	P		150		NMW
53.850	52.850	VK2RWI	Sydney	L	10	420	3.5	NWI
Victoria								
53.550	52.550	VK3RMH	Melbourne	O				VNE
53.575	52.575	VK3RDD	Dandenong	O				VGG
53.675	52.675	VK3RTN	Melbourne	O	25	1500	2.5	VSG(1)
53.900	52.900	VK3RMS	Melbourne	O	80	600	2.5	VWI
53.975	52.975	VK3RGM	Mansfield	O	25	1600	2.5	VSG(5)
Queensland								
53.725	52.725	VK4RGA	Central Qld	L	25	1010	5.0	QGL
53.725	53.125	VK4RIK	Cairns	P		480		QTR
53.775	52.775	VK4RAF	Mackay	T	15	330		QDW
Western Australia								
53.800	52.800	VK6RTH	Perth	O	10	230	4.0	WRG(10)
Tasmania								
53.825	52.825	VK7RMD	NW Tasmania	T	30	600	5.0	TNA

Voice Repeaters - 2 Metre Band

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
ACT and New South Wales								
146.625	146.025	VK2RBB	Byron Bay	O	10	150	3.0	NSU
146.625	146.025	VK2RLD	SW Sydney	O	10	330	4.5	NLI
146.650	146.050	VK2RCH	Coffs Harbour	O		300	3.0	NCH
146.650	146.050	VK2RDX	W Blue Mtns	O	50	1362	3.5	NSG
146.650	146.050	VK2RMI	Inverell	O	10	660	4.0	NMW
146.675	146.075	VK2RCV	Grafton	O	30	110	3.0	NSU
146.700	146.100	VK2RAO	Orange	O	50	1417	3.0	NOA
146.700	146.100	VK2RMU	Ulladulla	O	35	152	2.5	NMS
146.700	146.100	VK2RPM	Port Macquarie	O	50	552	3.5	NOX
146.725	146.125	VK2RAG	Gosford	O	40	318	3.0	NCC
146.750	146.150	VK2RFS	Far South Coast	O	10	670	3.5	NFS
146.750	146.150	VK2RTM	Tamworth	O	20	1430	3.0	NTM
146.750	146.150	VK2RWG	Wagga	O	25	480	3.0	NWG
146.775	146.175	VK2RTZ	Newcastle	O	10	400	3.0	NWE
146.800	146.200	VK2RCC	Coonabarabran	O	80	1100	3.5	NOR
146.800	146.200	VK2RIC	Lismore	O	15	85	3.0	NSU
146.800	146.200	VK2RLE	Sydney	O	100	240	3.5	NSG
146.800	146.200	VK2RTD	Tumut	O	36	930	4.0	NTU
146.825	146.225	VK2RET	Taree	O	25	435	3.0	NTR
146.825	146.225	VK2RHR	S. Highlands	O	10	662	3.0	NSO
146.850	146.250	VK2RAB	NW NSW	O	10	1225	4.0	NTM
146.850	146.250	VK2RAW	Illawarra	O	120	780	4.0	NIL
146.850	146.250	VK2RGF	Griffith	O	15	450	2.5	NGR
146.875	146.275	VK2RMB	Sydney	O	50	150	3.0	NMW
146.900	146.300	VK1RAC	Canberra	O	80	670	4.0	AWI
146.900	146.300	VK2RAN	Newcastle	O	70	300	5.0	NHB
146.900	146.300	VK2RRT	Condobolin	O	10	441	5.0	NAL
146.925	146.325	VK2RGR	Sydney North	O	10	30	2.5	NGA
146.950	146.350	VK1RGI	SE NSW	O	50	1770	3.0	AWI
146.950	146.350	VK2RNE	Glen Innes	O	10	1503	4.0	NNW
146.975	146.375	VK2RAN	Newcastle	O	25	300	10	NHB(MM)
147.000	146.400	VK2RCN	Port Macquarie	A				NOX
147.000	146.400	VK2RWI	Sydney	O	120	240	3.5	NWI
147.025	147.625	VK2ROT	Sydney	O	20	90	3.0	NOT
147.050	147.650	VK2RBM	Blue Mtns	O	20	900	3.5	NBM
147.075	147.675	VK2RCZ	West Sydney	A	20	150	3.0	NCA
147.075	147.675	VK2RPW	Walcha	A	25	1450	2.0	NWR
147.100	147.700	VK2RWM	Grenfell	O	70	575	3.0	NCW
147.100	147.700	VK2RWN	Nowra	P				
147.100	147.700	VK2RZL	Upper Hunter	L	10	800	3.0	NWE
147.125	147.725	VK2RWS	WICEN Portable	O				NWW
147.150	147.750	VK2RWS	Sydney	O	10	140	30s	NWW
147.175	147.775	VK2RWS	WICEN Portable	O				NWW
147.200	147.800	VK2RSD	Nowra	O	10	600	4.0	NSH
147.200	147.800	VK2RWH	Hunter-Scone	O				NWW
147.225	147.825	VK2RST	Sydney	O	10	25	4.0	NGA(SV)
147.225	147.825	VK2RYL	Rylstone	A				NSG
147.250	147.850	VK2RNS	Sydney	O	50	225	3.5	NHO
147.275	147.875	VK2RFT	Forster	P	10	85	3.0	NGL
147.275	147.875	VK2RIL	Wollongong	O	1005	410	4.0	NIL(RV)
147.275	147.875	VK2RMO	Tamworth	A				NTM
147.300	147.900	VK2RTS	Blue Mtns	O	25	370	5.0	NSA
147.350	147.950	VK2RBO	Coonanbong	A				
147.375	147.975	VK2RGL	Bulahdelah	O	25	650	3.0	NGL
147.375	147.975	VK2R??	Batemans Bay	P				
147.925	147.325	VK2RGN	Goulburn	O	20	750	3.0	NGN
Victoria								
146.650	146.050	VK3REG	E Gippsland	O	40	560	2.5	VWE(2)
146.650	146.050	VK3RGV	Shepparton	O	80	800	3.5	VWI
146.700	146.100	VK3RML	Melbourne	O	100	800	2.5	VWI
146.700	146.100	VK3RNC	Corryong	O	40		2.5	VWI
146.700	146.100	VK3RON	Ouyen	O	40		2.5	VWI
146.750	146.150	VK3RBA	Ballarat	O	15	750	3.0	VWI
146.775	146.175	VK3RUG	Alexandra	O	50	850	2.5	VSG(5)
146.800	146.200	VK3RLV	Latrobe Valley	O	80	730	2.5	VWE(4)
146.800	146.200	VK3RMA	Mildura	O	50	50	2.5	VWX
146.850	146.250	VK3RMN	Melbourne	P				VWI
146.850	146.250	VK3RHQ	East Victoria	O	30	1862		
146.850	146.250	VK3RSB	Benalla		80		2.5	VWI
146.900	146.300	VK3RBS	Ballarat Nth	O	30		2.5	VWI
146.900	146.300	VK3REB	Bairnsdale	O	30		2.5	VWI(2)
146.900	146.300	VK3RSH	Swan Hill	O	80	80	2.5	VS
146.950	146.350	VK3RWZ	Grampians	O	50	1170	2.5	VWZ
146.975	146.375	VK3RSR	Portable	O	<20		adj	VSA
147.000	146.400	VK3RGL	Geelong	O	160	400	2.5	VWI
147.000	146.400	VK3RNE	Wodonga	O	100	1158	2.5	VWY(14)
147.025	147.625	VK3RGS	Toora	O	80		2.5	VWI(4)
147.025	147.625	VK3RMK	Charlton	P				VWI
147.050	147.650	VK3RCG	E suburbs	P				VCG
147.050	147.650	VK3RGO	Omeo	O	40	1221	2.5	VWI(2)
147.050	147.650	VK3RVL	Robinvale	O	20		2.5	VWI
147.050	147.650	VK3RWL	Warrnambool	O	40		.5	VWI
147.075	147.675	VK3RCR	Melbourne	O				
147.100	147.700	VK3RPB	Bright	O	5		2.5	VWI(14)
147.100	147.700	VK3RSG	S. Gippsland	O	40		3.0	VWI
147.100	147.700	VK3RWA	Ararat	P	30	878	2.5	VWI
147.125	147.725	VK3RGC	Geelong	O	40		2.5	VWI
147.150	147.750	VK3RCV	Bendigo	O	40	730	3.0	VWM
147.150	147.750	VK3REM	Mallacoota	P		388		VWI
147.175	147.775	VK3REC	Melbourne	O	40	600	2.5	VEC
147.225	147.825	VK3RWG	W Gippsland	O	20	1563	2.5	VWE
147.250	147.850	VK3RMM	Melbourne	O	100	1011	2.5	VWW
147.275	147.875	VK3ROW	Otway Ranges	O				VWI
147.300	147.900	VK3RWP	Portable	O	20			VWW
Queensland								
146.625	146.025	VK4RGT	Gladstone	O	10	212	2.0	QGL
146.625	146.025	VK4RGY	Gympie	O	20	498	4.0	QGY
146.650	146.050	VK4ROM	Roma	O	30	550		QRM
146.675	146.075	VK4RET	Dalby	O	60	1145	5.0	QDA
146.675	146.075	VK4RTA	Atherton T'land	O	75	1170		QTB
146.700	146.100	VK4RAR	Rockhampton	O	50	608	4.0	QWC
146.700	146.100	VK4RAT	Townsville	O	100	584	4.5	QTO
146.700	146.100	VK4RGC	Gold Coast	O	50	1040		QGC
146.700	146.100	VK4RMI	Mt Isa	O	20	500	3.5	QMI
146.725	146.125	VK4RSB	Bowen	O	50	20		QBW
146.750	146.150	VK4RDD	Toowoomba	O	30	715	4.5	QDD
146.775	146.175	VK4RDY	Mackay/R'ton	P		820		QMK
146.800	146.200	VK4RBU	Bundaberg	O	20	620	4.0	QBU(13)
146.800	146.200	VK4RTI	Thursday Is	O	25	104	3.0	QTI
146.800	146.200	VK4RWP	Cape York	P				QWP
146.825	146.225	VK4RCR	Stanthorpe	T				QCU

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
146.850	146.250	VK4RHT	Mareeba	P	10	990	5.0	QTB
146.850	146.250	VK4RSC	Sunshine Coast	O	40	450		QSC
146.875	146.275	VK4RBS	Redlands	O	25	70	3.5	QB
146.875	146.275	VK4RCH	Chinchilla	O	150	340		QCC
146.900	146.300	VK4RAI	Ipswich	O	70	120	4.5	QIP
146.900	146.300	VK4RGA	Central Qld	O	100	1010	4.0	QGL
146.925	146.325	VK4RHR	Cent Qld	O				QCH(9)
146.925	146.325	VK4RRC	Redcliffe	O	25	520		QRC
146.950	146.350	VK4RBD	Blackwater	O	25			QCH(9)
146.950	146.350	VK4RCA	Cairns	O	100	1650	4.0	QCA
146.950	146.350	VK4RGG	Gold Coast	O	50	25	5.0	QGC
146.975	146.375	VK4RRR	Sarina	O	50	600	3.0	QCH(9)
147.000	146.400	VK4RBN	Brisbane	O	60	630	2.0	QBV
147.000	146.400	VK4RMK	Mackay	O	25	320	5.0	QMK
147.125	147.725		WICEN Portable	P				QWW
147.150	147.750	VK4RAG	Brisbane	O	50	90	3.5	QWW
147.150	147.750	VK4RWI	WICEN Portable	O	50			QWW
147.175	147.775	VK4RWM	Ipswich WICEN	O	10		1.0	QIP
147.175	147.775		WICEN Portable	P				QWW
147.300	147.900	VK4RGT	Brisbane	O	50	630	3.5	QTV
147.625	147.025	VK4RMV	Miriam Vale	O	25		5.0	QMO(13)
147.650	147.050	VK4RBT	Brisbane	O	50	233	4.5	QAR(RV)
147.675	147.075	VK4RBT	Brisbane	O	50	233	4.5	QAR(RV)
147.825	147.225	VK4REG	Brisbane	O	50	50	4.5	QRX(26)
147.850	147.250	VK4RCS	Collinsville	O				QBW
147.950	147.350	VK4RII	Burdekin	L	30	218		QTD
147.975	147.375	VK4RWB	Biloela	O	25			QBL(27)
South Australia								
146.625	146.025	VK5RLZ	Elizabeth	P	30	73	4.0	SEL
146.650	146.050	VK5RNC	Naracoorte	O	25	80	2.5	SWI
146.700	146.100	VK5RMN	Port Pirie	O	55	730	5.0	SWI(3)
146.750	146.150	VK5RAC	Lower Eyre Pen	O				SWI
146.800	146.200	VK5REP	Mid Eyre Pen	O	60	500	4.0	SWI(3)
146.825	146.225	VK5RBV	Barossa Valley	O	100	400	3.5	SBA
146.850	146.250	VK5RHO	Adelaide	O	50	410	3.5	SWI
146.900	146.300	VK5RMG	Mt Gambier	O	25	100	5.0	SWI
147.000	146.400	VK5RAD	Adelaide	O	50	610	3.5	SWI
147.925	147.325	VK5RLD	Riverland	O	25	86	5.0	SWI
147.825	147.825	VK5RBG		O				SBA(24)
Western Australia								
146.625	146.025	VK6RT?	Stirling	P				WRG
146.625	146.025	VK6RAT	Rottnest Is.	L				WRG
146.650	146.050	VK6RBY	Bunbury	O	25	20	5.0	WSW
146.675	146.075	VK6RNR	Northampton	O	25	280	4.0	WGE
146.675	146.075	VK6RCA	Wham Creek	O	20	220		WNW
146.700	146.100	VK6RAP	Perth	O	40	380	4.0	WRG
146.700	146.100	VK6RWR	Wickham	T	20			WNW
146.725	146.125	VK6RAL	Albany	O				WSG
146.750	146.150	VK6RLM	Perth	O	20	300	4.0	WRG
146.750	146.150	VK6RES	Esperance	P				WES
146.800	146.200	VK6RTH	Perth	O	60	230	4.0	WRG
146.800	146.200	VK6RWP	Exmouth/Pt Hed	O	20			WNW(11)
146.825	146.225	VK6RAA	Albany	O	40	430	3.0	WSG
146.850	146.250	VK6REX	North West	O	20	3853.0		WNW(22)
146.850	146.250	VK6RKB	Kambalda	O	30			WGO
146.875	146.275	VK6RSR	Perth-Fremantle	P				WSR
146.900	146.300	VK6RMW	Bunbury	O	20	520	4.0	WRG
146.950	146.350	VK6RPO	Fremantle	O	10	65	3.0	WRG
146.950	146.350	VK6RSG	Goldsworthy	O	20			WNW
146.975	146.375	VK6REE	Portable (sec)	O	20		4.0	WRG
147.000	146.400	VK6REE	Portable (pri)	O	20		4.0	WRG
147.000	146.400	VK6RAW	Katanning	O	25	400	5.0	WKA
147.000	146.400	VK6RAK	Kalgoorlie	O	40	400	5.0	WGO
147.000	146.400	VK6RGN	Geraldton	O	16	400	5.0	WGE
147.000	146.400	VK6RNW	Pt Hedland	O	20			WNW(11)
147.100	147.700	VK6RWC	Perth	O				WWA(29)
147.125	147.725	VK6RHB	Gin Gin	P				WSA
147.150	147.750	VK6RMJ	Manjimup	P				WSW
147.175	147.675	VK6RIC	Portable emerg	O				WWW
147.200	147.800	VK6RCT	Cataby	O	10	200	4.0	WRG
147.225	147.825	VK6RHW	Toodyay	O	30	450	3.0	WRG(12)
147.250	147.850	VK6RMS	Boddington	O	20	630	4.0	WRG
147.275	147.875	VK6RWM	Wyalkatchem	O	20	400	4.0	WRG(12)
147.300	147.900	VK6REN	Ensabba	P				WRG
147.325	147.925	VK6RKL	Kellerberrin	P	25	400	4.0	WRG(12)
147.350	147.950	VK6RBN	Busselton	O	10	130	4.0	WRG
Tasmania								
146.625	146.025	VK7RMD	NW Tasmania	O	30	600	5.0	TWU
146.700	146.100	VK7RHT	Hobart	O	60	1310	2.5	TWS
146.750	146.150	VK7RNW	NW Tasmania	O	30	180	5.0	TWU
146.900	146.300	VK7REC	East Coast	O	10	870		TEC(DV)
147.000	146.400	VK7RAA	Launceston	O	60	1400		TWN
147.075	147.675	VK7RWC	West Coast	O	20	1200	3.0	TWC
147.250	147.850	VK7RAF	Hobart	O	25	900	3.0	TMF
Northern Territory								
146.650	146.050	VK8RMS	Gove	O	25	150		SGR
146.700	146.100	VK8RDA	Darwin	O	15	200	6.5	SDA
146.950	146.350	VK8RCA	Alice Springs	O	25	300	3.0	SWI
147.000	146.40	VK8RTE	Darwin	O	15	350	6.5	SDA

Voice Repeaters - 70 cm Band

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
ACT and New South Wales								
438.025	433.025	VK2RCH	Coffs Harbour	P				NCH
438.025	433.025	VK2RTK	S Highlands	O	40	627	2.0	NSO(21)
438.075	433.075	VK2RAG	Gosford-Wyong	O	120	323	3.0	NCC
438.125	433.125	VK2RMU	Milton	O	18	330	3.0	NMS
438.175	433.175	VK2RMB	Sydney	O	5	150	3.0	NMW
438.175	433.175	VK2RNT	Armidale	O			3.0	NAD
438.225	433.225	VK2RPW	Walcha	A	35	1450	2.0	NWR
438.225	433.225	VK2RUW	Illawarra	O	230	801	4.0	NIL
438.275	433.275	VK2RWS	Sydney WICEN	O	2	140	30s	NWW
438.325	433.325	VK2REE	Taree	O	4	930	3.0	NTR
438.325	433.325	VK2RWM	Grenfell	P	25	575	3.0	NCW
438.375	433.375	VK1RIR	Canberra	O	60	790	3.5	AWI
438.375	433.375	VK2RUT	Sydney West	O	15	500	3.0	NBM
438.425	433.425	VK2RCN	Port Macquarie	A				NOX
438.425	433.425	VK2RUH	Sydney	O	25	100	4.0	NSG
438.475	433.475	VK2RRS	Sydney North	O	10	50	4.0	NGA
438.525	433.525	VK1RGI	SE NSW	O	60	1770	3.5	AWI
438.525	433.525	VK2RPM	Port Macquarie	L	10	552	3.0	NOX
438.525	433.525	VK2RWI	Sydney	O	48	240	3.5	NWI
438.575	433.575	VK2RAY	Albury	A				NTC
438.625	433.625	VK2RGN	Goulburn	O	10	750	3.5	NGN
438.625	433.625	VK2RUM	Newcastle	O	5	50	3.0	NAG
438.675	433.675	VK2RAN	Newcastle	O	60	300	5.0	NHB
438.675	433.675	VK2RSC	Lismore	O	10	300	3.0	NSU
438.675	433.675	VK2RTW	Wagga	?	10	300		NWG
438.725	433.725	VK2RIL	Illawarra	O	25	400	4.0	NIL
439.275	434.275	VK2RSD	Nowra	P		600		NSH
439.375	434.375	VK2RTM	Tamworth	P				NTM
439.425	434.425	VK2RCZ	West Sydney	A	20	150	3.0	NCA
439.575	434.575	VK2RJB	Jervis Bay	P				NJB
439.950	434.950	VK2RAG	Gosford	A		318		NCC
Victoria								
438.025	433.025	VK3RCC	Melbourne	O	10	30		
438.075	433.075	VK3RMU	Melbourne	O	900	1026	2.5	VWI
438.175	433.175	VK3RUG	Eildon	O	80	650	2.5	VSG(1)
438.225	433.225	VK3ROU	Melbourne	O	100	600	2.5	VWI
438.275	433.275	VK3RWE	Portable	O				VWW
438.375	433.375	VK3RGU	Gippsland	O	60		4.0	VWE
438.425	433.425	VK3RCU	Bendigo	O				VWI
438.475	433.475	VK3RBU	Ballarat	T	40		2.5	VWI
438.525	433.525	VK3RAD	Melbourne	O	60	100	2.5	VSG(1)
438.525	433.525	VK3RNU	Wangaratta	O	60	1051	2.5	VWI
438.525	433.525	VK3RRU	Mildura	O	20		2.5	VWI
438.625	433.625	VK3RWI	Portable	O	5			VWW
438.675	433.675	VK3RWU	Grampians	O	100	1170	3.0	VWI
438.700	433.700	VK3REO	Melbourne	O		348	4.5	VNL(30)
438.750	433.750	VK3RHF	Melbourne	O		600	2.5	VTF(15)
439.275	434.275	VK3RMM	Melbourne	O	100	1011	3.0	VWW
439.325	434.325	VK3RRM	Melbourne NW	O		873	4.5	VNL
439.375	434.375	VK3RSE	Melbourne	O				VSU
439.425	434.425	VK3RDU	NE Victoria	O		800		VWI
439.575	434.575	VK3RGL	Geelong	O	60	400	2.5	VWI
439.675	434.675	VK3RZU	Mansfield	T		1600		VWI
439.725	434.725	VK3RPU	Melbourne	O	40		2.5	VWI
439.875	434.875	VK3RSU	Shepparton	L				VWI
Queensland								
438.025	433.025	VK4RTQ	Brisbane	O	50	500		QTV
438.075	433.075	VK4RSC	Sunshine Coast	O	20	450		QSC
438.225	433.225	VK4RAT	Townsville	O	10	584	4.5	QTO
438.225	433.225	VK4RDG	Cent Qld Coast	O	25	808		QCD
438.225	433.225	VK4RGC	Gold Coast	O	50	500	3.5	QGC
438.325	433.325	VK4RCC	Redcliffe	O	25	230	4.5	QRC
438.375	433.375	VK4RWM	Ipswich	O	5	60		QIP
438.425	433.425	VK4RMU	Mackay	O	150	40		QMK
438.475	433.475	VK4ROX	Brisbane	O			4.5	QRX(26)
438.500	433.500	VK4RHR	Clermont	O	50	520		QCH
438.500	433.500	VK4RXG	Brisbane	O		233		QRX(26)
438.525	433.525	VK4RBC	Brisbane	O	20	560	2.0	QBV
438.625	433.625	VK4RAG	Brisbane	O	20	90		QRG
438.625	433.625	VK4RWI	Portable	L	50			QWW
438.675	433.675	VK4RBU	Bundaberg	O	10	620		QBU
438.700	433.700	VK4RET	Derby	O	12	1145	5.0	QDA
438.825	433.825	VK4RGY	Gympie	O	20	496		QGY
438.875	433.875	VK4RMC	Gympie	O				QCD
438.950	433.950	VK4RBA	Redbank	O	10	180		QBA
439.275	434.275	VK4RDU	Toowoomba	O		710		QDD
439.350	434.350	VK4RIK	Cairns	O	5	480		QTR
439.900	434.900	VK4REX	Maleny	O	50	525	5.0	QGX(8)
439.950	434.950	VK4RIY	Toowoomba	L				QGX
South Australia								
438.325	433.325	VK5ROH	Mt Gambier	O	15	135	3.5	SWI
438.425	433.425	VK5RBV	Barossa Valley	O	100	400	3.5	SBA
438.475	433.475	VK5RLZ	Elizabeth	P	40	73	3.0	SEL
438.525	433.525	VK5RVP	Adelaide	O	30	590	3.0	SWI

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
Western Australia								
438.225	433.225	VK6RTH	Perth	O	40	230		WRG(10)
438.525	433.525	VK6RUF	Perth	O	5	360		WRG(12)
438.675	433.675	VK6RBN	Busselton	P	40	130		WRG
Tasmania								
438.500	433.500	VK7RIN	Central Tas	O	25	1200		TAR
438.550	433.550	VK7RAB	NE Tasmania	O	5	1190		TWN
438.600	433.600	VK7RTC	Hobart	O	8		2.5	TAR
438.650	433.650	VK7RAC	NW Tasmania	O	3	150	2.5	TWU
Northern Territory								
438.275	433.275	VK8RDU	Darwin	O	8	200	3.0	SDA

Voice Repeaters - 23 cm Band

1281 100	1293.100	VK2RJB	Jervis Bay	P				NJB
1281 750	1293.750	VK2RWI	Sydney	O	10	240	3.0	NWI
1281 ???	1293.???	VK3RMU	Melbourne	P		1028		VWI
1281.650	1293.650	VK4REX	Maleny	O	10	525	5.0	QGX(8)
1281.250	1293.250	VK5RWH	Adelaide	O	50	200	3.0	SST

ATV Repeaters

ACT and New South Wales								
426.250	444.250	VK2RTW	Wagga	O	10	300	30	NWG
444.250	1250.000	VK2RWI	Sydney	P				NWI
579.250	426.250	VK2RTN	Newcastle	O				NLH
579.250	426.250	VK2RTS	Springwood	O	300	370	3.0	NSA
579.250	444.250	VK2RTG	Gosford	O	90	220		NCC
579.250	444.250	VK2RTV	Sydney	O	100	60		NGA
1250.000		VK2RAG	Gosford	O		313		NCC
Victoria								
579.250	426.250	VK3REX	Swan Hill	?				
579.250	426.250	VK3RMZ	Bendigo	O		730		VWM
579.250	444.250	VK3RNE	Wodonga	O		1158		VWY
579.250	444.250	VK3RTV	Melbourne	O		600		VWI
Queensland								
444.250	1250.000	VK4RAT	Townsville	P	20	584		QCG(23)
579.250	444.250	VK4RTV	Brisbane	O	100	140		QTV
1250.000	579.250	VK4RRP	SW Bris/Ipswich	P	10	188		QTV(25)
South Australia								
444.250	426.250	VK5RCN	Cent. North	O	10	400	30	SCN(6)
579.250	426.250	VK5RTV	Adelaide	O	200	200	30	STV(7)
1248.250	444.250	VK5RWH	Southern Vales	P	40	200	30	SSC
Western Australia								
579.250	444.250	VK6RAP	Perth	T	30	360		WRP
Tasmania								
426.250	444.250	VK7RMD	NW Tasmania	O	5	600	30	TNA
579.250	444.250	VK7RAE	Devonport	O	5	220	30	TNA

Packet Radio Repeaters

NOTE: In New South Wales and Victoria, a number of packet systems are to move from 147 MHz to the new 144.700 - 144.925 MHz packet segment. For these repeaters, the first two columns of the list below show the current and proposed new frequencies. For other states, these columns may list two frequencies, for those systems with dual frequency access.

Current	New	Call	Service Area	S	ERP	HASL	T/O	Sp
ACT and New South Wales								
144.700		VK2RAY	Albury	P				NTC
144.725		VK2RGI	Glen Innes	A				
144.750		VK2RPG	Goulburn	O		750		NGN
144.750		VK2RTM	Tamworth	O		1430		NTM
144.775		VK2RWG	Wagga	P				
144.800		VK1RGI	SE NSW	O	60	1770		AWI(17)
144.800		VK2RMB	Sydney	O	25	150	10s	NMW
144.825		VK2RT?	Bathurst	P				
144.825		VK2RCC	Coonabarabran	O		1100		NOR
144.825		VK2RFS	Bega	P		870		
144.850		VK2RPP	Monteagle	A				NGN
144.850		VK2RWI	Sydney	O	10	240	30s	NWI
144.875		VK2RCN	Mid North Coast	A				NOR
144.900		VK2RPH	Sydney	O	10	200		NHO
144.925		VK2RET	Taree	P				NTR
144.925		VK2RPS	Mittagong	O	50	827		NSO
145.050		VK2RPL	Lismore	O	25	85	3.0	NSU
147.575	144.700	VK2RAB	Tamworth-Narr	O		1225		NTM
147.575	144.675	VK2RAO	Orange	O	20	1417	30s	NOA
147.575	144.775	VK2RAW	Illawarra	O	100	780	4.0	NIL(16)
147.575	144.900	VK2RCH	Coffs Harbour	O		300		NCH
147.575	144.725	VK2RDX	Blue Mine West	O	20	1362	3.5	NSG
147.575	144.925	VK2RET	Taree	P				NTR
147.575	144.825	VK2RGF	Griffith	O		450		NGR
147.575	144.850	VK2RLO	Guyra	O				NSU
147.575	144.900	VK2RMU	Milton	O				NMS
147.575	144.875	VK2RPL	Lismore	O	25	85	3.0	NSU
147.575	144.875	VK2RPM	Port Macquarie	O		552		NOX
147.575	144.825	VK2RPN	Newcastle	O	10	400		NWE(16)
147.575	144.775	VK2RPW	Walcha	O		1450		NWR
147.575	144.875	VK2RSD	Nowra	O		600		NSH
147.575	144.750	VK2RTM	Tamworth	O		1430		NTM
147.600	144.700	VK2RAG	Gosford-Wyong	O	50	313	3.0	NCC(16)
438.675		VK2RPL	Lismore	?	25	85	3.0	NSU
439.075		VK2RAG	Gosford	O		313		NCC
Victoria								
144.700		VK3RPW	WICEN Portable	O	45			VWW
144.725		VK3RPW	WICEN Portable	O	45			VWW
144.750		VK3RPW	WICEN Portable	O	45			VWW
144.775		VK3RPW	WICEN Portable	O	45			VWW
144.800		VK3RPK	Melbourne	L	25	240		VWI
144.800		VK3RPW	WICEN Portable	O	45			VWW
144.825		VK3RPW	WICEN Portable	O	45			VWW
144.850		VK3RPW	WICEN Portable	O	45			VWW
144.875		VK3RPW	WICEN Portable	O	45			VWW
144.900		VK3RPP	Melbourne	O	25	100		VWI
144.900		VK3RPW	WICEN Portable	O	45			VWW
144.925		VK3RPW	WICEN Portable	O	45			VWW
147.575		VK3RPW	WICEN Portable	O	45			VWW
147.575	144.925	VK3RCU	Bendigo	O	25	527		VWI
147.575	144.825	VK3RGU	E Gippsland	T				VWE
147.575	144.875	VK3RGV	Shepparton	O	25	800		VWI
147.575	144.725	VK3RMU	Melbourne	O	25	1028		VWI
147.575	144.725	VK3RNU	Wodonga	O	25	1051		VWI
147.575	No VHF	VK3RPA	Melbourne	O	10	83		VWI
147.575	144.750	VK3RPC	Ballarat	O	20	741		VWI
147.575	144.850	VK3RPG	Grampians	O		1170		VWI
147.575		VK3RPM	Bendigo	L	25	240		VWI
147.575	144.925	VK3RPN	NE Vic	O		1840		VWI
147.575	144.900	VK3RPO	NW Vic	L	25			VSR
147.575		VK3RPS	Melbourne	O	25	320		VWI
147.575	144.725	VK3RRU	Mildura	L	25			VWI
147.600	No VHF	VK3RPA	Melbourne	O	45	83		VWI
147.600	144.750	VK3RPC	Ballarat	O	20	741		VWI
147.600		VK3RPS	Melbourne	O	25	320		VWI
147.600		VK3RPW	WICEN Portable	O	45			VWW
147.600		VK3RUG	Eldon/Alexandra	O				
434.200		VK3RPK	Melbourne	L	25	240		VWI
439.050	—	VK3RPA	Melbourne	L		83		VWI
439.050	434.050	VK3RPS	Melbourne	L	25	320		VWI
439.075		VK3RPP	Melbourne	L	25	100		VWI

Freq 1	Freq 2	Call	Service Area	S	ERP	HASL	T/O	Sp
Queensland								
144.700		VK4RWI	WICEN Portable	A				QWW
144.750	144.900	VK4RHR	Clermont	O				QCH
144.800		VK4RAR	Rockhampton	O		800		QWC
144.825	147.600	VK4RZA	Gold Coast	O	50	940		QDG
144.825	147.600	VK4RZD	Toowoomba	O	50	709		QDG(49)
144.825	147.600	VK4RZE	Darling Downs	O	25			QDG(49)
144.850	147.600	VK4RZB	Brisbane	O	50	230		QDG
144.900		VK4RAT	Townsville	O		584		QTO
144.900		VK4RBD	Blackwater	O				QCH
144.900		VK4RBU	Bundaberg	O	20	620		QBU
144.900		VK4RCA	Cairns	O		1650		QCA
144.900		VK4RGA	Gladstone	O	25	1010		QGL
144.900		VK4RMK	Mackay	O	25	320		QMK
144.900		VK4RTA	Atherton T'land	O				QTB
144.900		VK4RZM	Moranbah	O	25	800		QCH
144.900		VK4RIK	Cairns	P	120	480		QTR
144.900	147.600	VK4RZC	Sunshine Coast	O	50	470		QDG(49)
144.950		VK4RWH	Ipswich	O				QIP
144.950		VK4RWM	Ipswich	O				QIP
144.975		VK4RZS	Sunshine Coast	O	25			QSC
145.050		VK4RBT	Brisbane	O	50	233		QAR
145.100		VK4RPK	Nth Brisbane	O	25			QRX(50)
South Australia								
144.900		VK5RSV	Adelaide	O		200		SWI
147.575		VK5LZ	Adelaide	O				SEL
147.575		VK5RBP	Barossa Valley	O				SBA
147.575		VK5RMN	Port Pirie	O		730		SWI(31)
147.575		VK5RPM	Millicent	O	100	225		SER
147.575		VK5ZLW	Adelaide	O		610		(26)
147.600		VK5RPG	Adelaide	O				
Western Australia								
144.750		VK6RTR	Pinjarra	O	25	410		WWA
144.800		VK6RAT	Rottnest Is	P	25			WRD
144.825		VK6RTH	Perth	T	25	230		WRD(19)

Freq 1	Freq 2	Call	Service Area	S	ERP	HASL	T/O	Sp
144.850		VK6RAA	Albany	O	10	430		WSG
144.850		VK6RAP	Perth	O		360		WRD(19)
144.850		VK6RAW	Kalanning	O	25	400		WKA
144.850		VK6RBN	Busselton	O	25	130		WRD
144.850		VK6RCA	North West	O	20	220		WNW
144.850		VK6RFH	Perth	O	25			WDC
144.850		VK6RMS	Boddington	O	25	630		WRD(19)
144.875		VK6BBS	Perth	O		360		WTT
144.875		VK6RAP	Perth	O	25	360		WRD
147.050		VK6TTY	Perth	O		360		WRD(20)
Tasmania								
147.575		VK7RIT	Hobart	O	10	1310		TWI
147.575		VK7RTV	N Tasmania	O		1400		TWI
Northern Territory								
147.600	88S	VK8BBS	Alice Springs	O		300		SAL

RTTY Repeaters

Output	Input	Call	Service Area	S	ERP	HASL	T/O	Sp
New South Wales								
146.675	146.075	VK2RTY	Sydney	O	40	72	10	NAN
146.975	146.375	VK2RAN	Newcastle	O	10	300	5.0	NLH(RV)
147.275	147.675	VK2RIL	Wollongong	O	10	399	4.0	NIL(RV)
439.325	434.325	VK2RTY	Sydney	P	40	72	10	NAN
Victoria								
147.325	147.925	VK3RBB	Gippsland	?	20	730	10	VWI
147.350	147.950	VK3RTY	Melbourne	O		600		VWI
Queensland								
147.650	147.050	VK4RBT	Brisbane	O	50	233	4.5	QAR(RV)
147.675	147.075	VK4RBT	Brisbane	O	50	233	4.5	QAR(RV)
South Australia								
146.675	146.075	VK5RSV	Adelaide	O	35	200	10	SSC(18)
Western Australia								
147.050	147.650	VK6RTY	Perth	O	15	360	10	WRD(20)

Repeater Notes

1 VK3RTN 53.675 and VK3RAD 438.525 are linked - 123 Hz access.
VK3RUG to be added to the link.
2 VK3REG 146.850, VK3REB 146.900 and VK3RGO 147.050 are to be linked.
3 VK5RMN 146.700 and VK5REP 146.800 are to be linked.
4 VK3RGS 147.025 and VK3RLV 146.800 are to be permanently linked.
5 VK3RGM 53.975 and VK3RUG 146.775 are linked - 123 Hz access.
6 VK5RCN can be linked to VK5RTV on command: control link 147.3.
Link video input 579.25, extra audio input 147.3.
7 VK5RTV can be linked to VK5RCN on command: control link 147.3.
Link video input 444.25, extra audio input 147.4 SSTV input 147.350.
8 VK4REX 1281.650 and 439.900 are permanently linked.
A signal on either input is retransmitted on both outputs.
9 VK4RBD 146.950, VK4RHR 146.925 and VK4RRR 146.975 are linked by VK4REB.
10 VK6RTH 53.800 and VK6RTH 438.225 are permanently linked.
11 VK6RWP 146.800 and VK6RNW 147.000 are to be linked.
12 VK6RHW 147.225 and VK6RWM 147.275 are permanently linked.
VK6RWM 147.275 is to be linked to VK6RKL 147.325.
13 VK4RBU 146.800 and VK4RMV 147.625 have DTMF command link.
14 VK3RNE 147.000 and VK3RPB 147.100 are to be linked.
15 VK3RHF ten metre repeater link on 438.750 also operates as a repeater in its own right. Tone access 141.3 Hz.
16 To remain on 147 MHz until Channel 5A closes.
17 4800 baud.
18 VK5RSV has packet gateway to VK5WI BBS.
19 VK6RAP 144.850, VK6RTH 144.825 and VK6RMS 144.850 are to be linked.
20 VK6TTY and VK6RTY are linked RTTY/packet repeater and bulletin board.
21 After 15 seconds of inactivity, a carrier of at least 2 seconds duration is required to regain access.
22 Off air for extensive repairs.
23 FM in, VSB AM out.
24 Experimental simplex link which operates with VK5RBP (147.575).
25 VK4RRP is an FM ATV translator for VK4RTV.
26 Callsign to be changed to VK5RAD.
27 CTCSS 88.5 Hz.
28 CTCSS 91.5 Hz.
29 CTCSS 77 Hz.
30 CTCSS 123 Hz. VK3REO 438.700 to be linked to VK3RRM 434.325.
31 Directional beam, aimed south.

MM Multimode repeater
DV Data/voice repeater.
RV RTTY - voice repeaters.
SV SSTV - voice repeater

Index of Beacon and Repeater Sponsors

ACT
AWI WIA ACT Div
New South Wales
NAD Armidale DARC
NAG Newcastle ATV Grp
NAU Newc ATV/UHF Club
NAL Albert ARC
NAN ANARTS
NBM Blue Montains ARC
NCA Chilley ARC
NCC Central Coast ARC
NCH Coffs Harbour DARC
NCW Central West ARC
NFS Far Sth Coast ARC
NGA Gladesville ARC
NGL Great Lakes RC
NGN Goulburn ARC
NGR Griffith ARC
NGU Gunnedah ARC
NHB Hunter Branch RG
NHO Hornaby DARC
NIL Illawarra ARS
NJB Jervis Bay Rp Grp
NLH Lower Hunter ARC
NLI Liverpool ARC
NMS Mid Sth Coast ARC
NMW Manly-Warringah DRC
NNW Northwest ARG
NOA Orange ARC
NOR Orana Region ARC
NOT OTC ARG
NOX Oxley Region ARC
NSA Sydney ATV Group
NSG St George ARS
NSH Shoalhaven ARC
NSJ
NSO Sth Highlands ARC
NSU Summerland ARC
NTC Twin Cities REC
NTM Tamworth ARC
NTR Taree ARC
NTU Tumut DARC
NWE Westlakes ARC
NWG Wagga ARC
NWI WIA NSW Div
NWR Walcha Radio Grp
NWW VK2 WICEN
Victoria
VBA Ballarat AR Group
VCG Camb. Gr. School
VEC EMDRC
VGG Gippsland Gase RC
VNE North East ARG
VNL Newe Links ARG
VSA Vic Scout Assoc
VSG Six Metre Rep Grp
VSH Swan Hill DARC
VSR Sunraysia ARG
VSU SE UHF Repeater Grp
VTF 10m FM Group
VWE WIA Eastern Zone
VWI WIA Vic Div
VWM WIA Midland Zone
VWW VK3 WICEN
VWX WIA NW Zone
VWY WIA NE Zone
VWZ WIA Western Zone
Queensland
QAR QARDATA
QBA Brisbane ARC
QBL Biloela DRC
QBU Bundaberg ARC
QBV Brisbane VHF Group
QBW Bowen RAG
QBY Bayside ARS
QCA Cairns ARC
QCC Chinchilla RC
QCD Cent Qld Dig Grp
QCG Commex Group
QCH Cent Highlands ARC
QCO Cooloola ARC
QCU Cunningham RC
QDA Dalby DARC
QDD Darling Downs RC
QDG Qld Digital Group
QDW Watterson Group
QGC Gold Coast ARS
QGL Gladstone ARC
QGX Gold Coast R Exp Grp
QGY Gympie ARC
QIP Ipswich RC
QMI Mt Isa DARG
QMK Mackay ARC
QMO Monto ARC
QRC Redcliffe RC
QRG Radio Amateurs' Grp
QRM Roma DARS
QRX Radio Exp. Group
QSC Sunshine Coast ARC
QTB Tableland REC
QTI Thursday Is RC
QTO Townsville ARC
QTR Qld Tropical VHF Ass.
QTV SEQ ATV Group
QWC WIA Cent Qld Branch
QWI WIA Qld Div
QWP Weipa RC
QWW VK4 WICEN
South Australia and N.T.
SAL Alice Springs ARC
SBA Barossa ARC
SCN Cent North ATV Grp
SDA Darwin ARC
SEL Elizabeth ARC
SER SE Radio Group
SGR Gove Repeater Grp
SSC South Coast ARC
SST Southern ATV Group
STV SA ATV Group
SWI WIA SA Div
Western Australia
WDC WAADCA
WES Esperance ARS
WGE Geraldton ARC
WGO Goldfields ARC
WKA Kalanning ARC
WNW ARS of NW Aust
WPT Perth TV Group
WRD WARG/WAADCA
WRG WA Repeater Group
WRP WARG/WPT
WSA WA Signals ARG
WSG Southern Elec Grp
WSR Southern River Grp
WSW Southwest ARG
WTT Think Tank
WVH WA VHF Group
WWA Western ARS
WWI WIA WA Div
WWK Wickham ARC
WWW VK6 WICEN
Tasmania
TAR Amateur Radio Assoc
TEC East Coast ARC
TMC Aust Maritime Coll.
TMF Mt Faulkner Rep Grp
TNA NW ATV Group
TWC West Coast RG
TWI WIA Tas Div
TWN WIA Northern Branch
TWS WIA Southern Branch
TWU WIA NW Branch
TWW VK7 WICEN

WIA Videotape Program Title Listing

as of 1/1/92

SUPPLIED BY JOHN INGHAM VK5KG
FEDERAL VIDEOTAPE CO-ORDINATOR

See note	TITLE (in chronological order within each subject grouping)	Lecturer	Prod.	Approx Dur.	Col B&W	Year Prod	Description
	AMATEUR RADIO - HISTORIC INTEREST						
	Wireless Telegraphy -circa 1910			10mins	B&W	1910	Archive material courtesy David Wardlaw VK3ADW
©	Amateur Radio - TV Pilot		WIA NSW	30mins	B&W	1956	Archive material courtesy TEN channel 10
©	Opening of Burley Griffen Bldg - SA HQ		VK5KG	50 mins	Col	1977	Archive material
	ATV in Australia 1976 - made for British ATV Club		VK5KG	30mins	Col	1978	Archive material
	ATV in United Kingdom 1978 - reply from BATC		G8CJS	30mins	Col	1978	Archive material
	ATV in Australia 1980/81 - Made for British ATV Club		VK5KG	60mins	Col	1980	Clips from ATV Groups in VKs 2,3,4,5 & 7
	History of ATV in South Australia		VK5KG	30mins	Col	1980	Archive material, still building
	ATV in United Kingdom 1978/81		G8CJS	30mins	Col	1981	Remake of their previous effort
o	CQ ATV DX International 1983		WB2LLB	60mins	Col	1983	ATV in USA and Europe
	High Definition TV Tutorial	Don Fink	WB2LLB	60mins	B&W	1983	A look at what is to come in Broadcast TV
	ATV Hamfest, York Pennsylvania, Sept.'83	Various	WB2LLB	6hrs	Col	1983	Various ATV technical lectures from USA
	Opening of Amateur Radio House - NSW HQ		VK2BON	1' 42"	Col	1983	[illegible]
	VK2 75th Aniv Seminar Keynote Speeches		WIA NSW	2' 15"	Col	1983	Dr. David Wardlaw & State Manager DOC
	ATV in Victoria, 1984		VK3AHJ	54mins	Col	1984	Courtesy of "The Roadshow Gang"
©	Heard Island Dxpedition		ch 2,7, 9,10	20mins	Col	1984	Archive material; NO LOAN OR COPY AVAILABLE
	Heard Island Dxpedition	VK2BCC	WIA NSW	60mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
	AMATEUR RADIO - PROMOTIONAL						
o	The Ham's Wide World		ARRL	27mins	Col	1969	Superseded by "The World of Amateur Radio"
	This is Amateur Radio		ARRL	15mins	Col	1970	Pitched at teenagers
	Moving Up to Amateur Radio		ARRL	11mins	Col	1975	Pitched at CBers
©	7J1RL DXpedition		JARL	60mins	Col	1976	General Amateur Radio interest; LOAN ONLY
	This Week has 7 Days looks into Amateur Radio		HSV7	25mins	Col	1978	Pitched at teens; includes some ARRL footage
o	The World of Amateur Radio		ARRL	28mins	Col	1978	Superseded by "The New World of Amateur Radio"
	Amateur Radio - The National Resource of Every Nation		VK5KG	6mins	Col	1979	Encapsulates AR; good for public exhibitions
	The New World of Amateur Radio		ARRL	28mins	Col	1988	Supersedes "The World of Amateur Radio"
	ANTENNAS						
	G6CJ's Aerial Circus	G6CJ	WIA	90mins	B&W	1977	THE Definitive Antenna Lecture; LOAN ONLY
	Wire Antennas	VK5RG	VK5KG	40mins	B&W	1978	Antennas for HF and Antenna Tuners
	Loaded Wire Antennas	VK5NN	VK5KG	50mins	Col	1980	Using Inductive and Capacity loaded Antennae
w	Antennas and Directivity	VK2BBF	OTC	73mins	Col	1985	Lecture given to a group of Radio Amateurs
	Antenna Rotator Systems	VK5AMI	VK5KG	50mins	Col	1986	Servicing the several different types
	Broadband Antennas	VK5RG	VK5KG	62mins	Col	1986	Includes terminated antennas
	ATV - ACTIVITY						
	Hello from America! - Made for British ATV Club		WB0QCD	100min	Col	1986	Clips from ATV Groups in the USA
	ZL ATV Activity		ZL1ABS	62mins	Col	1986	"VCR QSO" from ZL1ABS
	VK5 ATV Call-in		VK5ZBD	88mins	Col	1990	Made for VK4XRL who had recently visited
	ATV - GENERAL INTEREST						
	Low Definition Television	Chris Long	VK5KG	25mins	Col	1982	Re-creation of TV as transmitted by Baird
	Model Aero-Nautical Mobile ATV	VK5GO	VK5KG	8mins	Col	1983	ATV camera & TX mounted in a model aeroplane
	VK5RCN - Aust.'s first wind powered ATV repeater.	VK5KAU	VK5KG	61mins	Col	1986	Tour of VK5RCN by Barray Bryant (silent key)
	Australian TV History - The Untold Story	Chris Long	VK5KG	58mins	Col	1986	Lecture to Radio Amateurs Old Timers Club
	Australian TV History - Part 2	Chris Long	VK5KG	40mins	Col	1986	Technical slides not used in the above
	The Development of the TV Test Card	George Hersee	G8PTH	43mins	Col	1986	Made for BATC by the BBC Training Dept
NEW	TV for Amateurs		BATC	19mins	Col	1990	Excellent introduction to ATV
NEW	The first nation-wide ATV AUSSAT TX		Gladesville ARC	2hours	Col	1990	Noisy off-satellite but interesting
	ATV - TECHNICAL						
o	The Signal to Noise Story	VK3ATY	VK3AHJ	45mins	Col	1982	Superseded by "UHF Pre-amplifiers" (below)
	UHF Preamplifiers	VK3ATY	VK3AHJ	45mins	Col	1983	Explanation and demo. of low noise preamps
	Getting Started in Amateur Television	VK5KTV	VK5KG	55mins	Col	1983	How to set up an ATV station
	Testing ATV Transmitters	VK5KG	VK5KG	50mins	Col	1983	How to correctly measure ATV systems
	COMPUTERS						
	Demo. of VK5RTV's Micro-Computer Controller #1	VK5KG	VK5KG	10mins	Col	1979	First u-Computer controlled repeater in VK
o	Understanding Micro-Processors	VK5PE	VK5KG	60mins	Col	1980	A somewhat dated technical description
o	An ATV Hamshack Micro-Computer	VK3AHJ	VK3AHJ	10mins	Col	1981	Describes now unavailable microcomputer kit
	Getting Started in Amateur Micro-Computers	VK5IF	VK5KG	33mins	Col	1983	Demo. of hard- & software for Amateur Radio
	DATA TRANSMISSION						
	Getting Started in Amateur RTTY	VK5JM	VK5KG	86mins	Col	1983	RTTY using teleprinters and Micro-Computers
	Amateur Packet Radio	VK5AGR	VK5KG	60mins	Col	1984	Theory and Demonstration.
	Packet Radio - 10 months on	VK2KYJ VK2AAB	WIA NSW	65mins	Col	1985	Raw Unedited; from 75 anniv. VK2 Seminar
w	X25 Protocols and Packet Switching	VK2ZXB	OTC	47mins	Col	1986	Lecture given to a group of Radio Amateurs
	MICROWAVE TECHNIQUES						
	Introducing Microwaves	VK5ZO	PJ Video	74mins	Col	1989	Des Cliff gives a "Nuts & Bolts" technical lecture
	PROPAGATION						
	Getting Started in Understanding the Ionosphere	VK5NX	VK5ZBD	50mins	Col	1983	How the ionosphere aids HF communication
	VHF Signal Enhancement by Aircraft	VK2ZAB	WIA NSW	70mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
	SATELLITES						
o	Getting Started in Amateur Satellites	VK5HI/VK5AGR	VK5KG	60mins	Col	1983	Superseded (see below)
o	An Introduction to Amateur Satellites (Pt 1)	VK5AGR	VK5KG	60mins	Col	1984	An overview of Amateur Satellite working
o	Micro-Computer Aids to Satellite Tracking (Pt 2)	VK5AGR	VK5KG	30mins	Col	1984	Programs for tracking & decoding telemetery
	Using Phase III Amateur Satellites	VK5HI	VK5KG	90mins	Col	1984	History, construction & use of high orbit sats.
	The Amsat Oscar Phase 3 Story	DJ4ZC	VK5KG	60mins	Col	1985	Dr. Karl Meinzer "The Father of Oscar" inc film of

Antennas for Satellites		WIA NSW	75mins	Col	1986	launch. Raw Unedited; from Dr Trevor Bird's 1986 VK2 Seminar
Apollo 13 Disaster	VK5JM	VK5KG	90mins	Col	1980	Australian tracking procedure saved Apollo 13
o SSTV Pictures from Space - Voyager		VK5KG	15mins	Col	1983	SSTV pix converted from Saturn fly past
Aussat Australia's Domestic Comms. Satellite	VK5JM	VK5KG	62mins	Col	1984	Technical description of services offered
Amateur Radio's Newest Frontier		ARRL	26mins	Col	1985	Amateur Radio in Space; General P.R.
Working W5LFL in orbit from VK1ORR	Richard Elliot		23mins	Col	1986	Raw Unedited actuality footage
An Auxiliary Battery Charger	VK5NK	VK5KG	30mins	Col	1981	Charging a second mobile battery
Lecture Winning Foxhunts	VK5TV	VK5KG	45mins	Col	1981	How to do it from one who has!
Getting Started In Amateur Construction	VK5ARM	VK5KG	50mins	Col	1983	Mechanical hints for novice constructors
The Communications. Consequences of Nuclear War	Dr. John Coulter	VK5ZBD	60mins	Col	1983	Why your gear may not survive even if you do!
The Far Eastern Broadcasting Company		VK5KG	60mins	Col	1984	How a Short Wave Broadcaster operates
The Aust. "Over the Horizon Radar"	Dr. Phil Whitham	VK5KG	60mins	Col	1984	How the "Australian Woodpecker" works
What to Expect when the RI Calls!		VK5KG	34mins	Col	1984	by Geof Carter - a Dept of Comms. Field Officer
Doppler Direction Finding for Foxhunters	VK2BYY	WIA NSW	43mins	Col	1985	Raw Unedited; from 75 anIv VK2 Seminar
w Fitting BNC Connectors		OTC	7mins	Col	1985	Correct Assembly of Crimp type BNC plugsx
w Handling Static Sensitive P.C.Bs.	Paul Tardent	OTC	8mins	Col	1986	Improving reliability of Printed Ccts.
Extra License Grades	VK2ZTB	WIA NSW	70mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
Thick Film Modules	VK5DI	VK5KG	45mins	Col	1986	Description of modules available from VK5 WIA
Quartz Crystals	VK5GL	VK5GL	100mins	Col	1986	Clem Tilbrook gives a "Nuts & Bolts" expert technical lecture

NOTE.."©" = Copyright; no copy service.. "*" = Optically Converted to PAL from NTSC by WB2LLB; noticeable flicker. "w" = available ONLY to Radio Clubs Affiliated with the WIA as per agreement with OTC "o" = program now out of date Standard Formats: "Video-8" & "VHS" both Standard and Long Play, & "Beta"; - please specify when ordering.

New Frequencies for VNG

Continued from page 22

60th minutes without interruption to the time signals. The speech is "notched" to allow seconds markers to continue and has spectral components around 1000Hz removed to avoid erroneous operation of tuned relay time circuits. The text of the normal announcement is: "This is VNG, Llandilo, New South Wales, Australia on 5, 8.638, 12.984 or 16MHz. VNG is an Australian standard frequency and time signal service. Enquiries may be directed to: VNG Users Consortium, GPO Box 1090, Canberra, ACT, Australia 2601.

The announcer is Graham Connolly, an amateur radio operator (callsign VK2BL) and retired ABC radio newsreader.

Morse Station Identification — Broadcast on 8.638 and 12.984MHz Only: Given during the 15th, 30th, 45th and 60th minutes without interruption to the time signals. VNG is transmitted in slow Morse at a frequency of approximately 500Hz up to six times per minute. Broken idents may occur at the beginning and end of the minute.

VNG Funding: AUSLIG (the Australian Surveying and Land Information Group of the Department of Administrative Services) has undertaken to fund VNG for at least five years from June 1989, provided it gets adequate cost recovery from users. This may be achieved by purchasing bulletins from AUSLIG or by making donations payable to the VNG Users Consortium.

Reception Reports: Written reports or cassette tapes should be sent to the VNG Users Consortium. Reports should be sufficiently detailed to permit verification. Tape recordings can be very short provided VNG is recognisable. Tapes will not be returned unless requested. QSL folders will be issued if reports are valid, but return postage would be appreciated from those other than financial contributors to VNG's running costs.

Time Code: The time code format incorporates time of day and day number of year information in binary-coded-decimal (BCD) form, and the method of encoding complies with CCIR recommendations for time codes. The BCD time code transmission takes place between seconds marker 20 and seconds marker 46.

The Story Of Stephen Frith

Continued from Page 20

1000, the cursor scans to the next option and again enters the count loop and so on. When the switch is pressed, the program jumps out of the count loop and stops, and does not proceed until the switch is released. In this way, if Stephen has a spasm while he is pressing the switch or for some reason cannot release the switch, the program "waits" for him.

General Hints

Programs should be ready to run as soon as power is applied. The only attention needed from the nursing staff is to switch on the mains power. From then on the programs should be under the complete control of the operator

I have found the Microbee 32K ROM-based computer to be more than adequate for this work. This model is easy to program, and what is very important, very cheap to buy on the second-hand market. All my latest programs are put into EPROMS and there are spaces for at least five on the Microbee memory board. I have fitted a new Basic ROM to the memory board, which passes computer control to the first EPROM when first switched on. The keyboard now has no role to play and could be removed, making the computer dedicated and virtually a black-box.

In the next and final instalment, Part 4, I will give some details of the effects that adding a speech synthesiser has made to Stephen's computer system. **ar**

AWARDS

JOHN KELLEHER VK3DP – FEDERAL AWARDS MANAGER

Activity in the awards area has been most encouraging, and I am pleased to report that with your participation, help and sometimes timely advice, I have made a success of this otherwise "binding" job, and turned a "chore" into a meaningful pleasure. The backlog of applications has been removed, and correspondence is now on a weekly basis.

This office handles all awards from IARU-affiliated countries, but not from *CQ* magazine. The latter are dealt with by Bill Vogel, whose address was published earlier.

The most popular awards so far processed have been for WAVKCA, WAS (USA) and WAC (USA), along with upgrades for DXCC, but very few for the actual DXCC. A DXCC standings list is shown below.

DXCC Standings list updated 1/2/92

DXCC Open/ Mixed Tallies

322/373	VK6RU	280/303	VK3KS
322/342	VK6HD	278/313	VK7LZ
322/330	VK3AKK	278/295	VK6HD
321/367	VK6MK	276/303	VK2APK
321/363	VK3YL	275/317	VK6RU
321/355	VK5WO	261/263	VK3AKK
321/330	VK30T	259/291	VK3RJ
319/363	VK4KS	238/260	VKETL
317/350	VK4RF	237/248	VK5WO
314/329	VK3AMK	213/220	VK7BC
313/318	VK7BC	211/220	VK3JI
312/314	VK3YJ		
311/324	VK4AK	DXCC SSB/ Phone Tallies	
310/349	VK4SD		
308/345	VK7LZ	322/373	VK6RU
308/330	WA3HUP	322/372	VK5MS
306/316	VK3QI	322/353	VK5WO
306/356	VK4FJ	322/342	VK6LK
304/321	VK5WV	322/335	VK6HD
302/339	VK3XB	322/330	VK3AKK
299/323	VK4PX	321/363	VK4LC
299/310	VK1ZL	321/367	VK6MK
295/299	VK3CQN	318/327	VK3OT
293/309	VK4BG	317/333	VK4RF
292/294	VK2AKP	314/329	VK3AMK
291/309	VK4UC	314/326	VK6NE
290/314	VK2SG	314/315	VK3DYL
287/312	VK2APK	313/350	VK5AB
287/289	VK6RO	312/314	VK3YJ
		310/314	VK3CSR
DXCC Standings List. CW		309/324	VK4VC
		309/321	VK4AK
311/357	VK2QL	309/313	VK3CSR
304/340	VK3YL	308/319	VK3QI
302/348	VK2EO	306/326	VK7LZ
300/330	VK3XB	305/321	VK5XN
298/322	VK4RF	305/311	VK3RF
297/345	VK4FJ	305/310	VK3AWY
286/326	VK3YD	305/308	VK3WJ

Tables shown are reproduced from Edmund T Tyson N5JTY "Conversion Between Geodetic and Grid Locator Systems" QST January 1989.

305/308	VK6AJW	278/279	VK5EE
304/321	VK5WV	276/298	VK3KS
304/307	VK6AJW	274/275	VK3VU
304/306	VK3YZ	267/271	VK3CYL
303/309	VK7BC	266/278	VK5LC
303/307	VK6HE	265/281	VK2AAK
300/343	VK4FJ	265/270	VK5RX
299/300	VKVK1ZL	257/258	VK3DP
299/300	VK3DYL	256/298	VK3NC
294/308	VK1WB	254/274	VK2SG
294/328	VK2APK	254/256	VK3GI
292/312	VK4PX	252/277	VK3TL
290/294	VK6YL	246/261	VK3VO
288/333	VK3JA	245/256	VK3VK
287/292	VK6IR	245/260	VK3JI
287/290	VK6IH	225/240	VK3VQ
287/289	VK6RO	224/225	VK2CKW
286/311	VK3JI	220/222	VK5BO
285/291	VK7AE	212/213	VK6YF
285/290	VK2DU	202/205	VK6NAT
284/290	VK3DU	200/201	VK4DD
283/286	VK5OU		

In the previous issue, the rules for the WIA grid square award were published. Now I will attempt to simplify the actual procedure of determining your own grid square. Bear in mind that the WIA GSA only requires verified contacts in a two-degree by one-degree area.

The Maidenhead Locator System

The earth's surface is divided into 324 "fields", each 20 degrees (longitude) by 10 degrees (latitude). Each field is divided into 10 x 10 = 100 "squares", each two degrees (longitude) by one degree (latitude). It is upon the latter you will operate. Start by finding your latitude and longitude from a local area map.

The first character (always a letter) specifies *longitude* in 20-degree increments. The second character (also a letter) specifies *latitude* in 10-degree increments. The third and fourth characters are digits in the range 0 through 9. The third character divides *longitude* lines into two-degree increments. The fourth character divided *latitude* zones into one-degree increments.

The following tables should assist you in determining your actual "grid square".

Table 1

1st Longitude Character

Degrees Longitude	Letter
–180	A
–160	B
–140	C
–120	D
–100	E
–80	F
–60	G
–40	H
–20	I
0	J
+20	K
+40	L
+60	M
+80	N
+100	O
+120	P
+140	Q
+160	R
+180	

Table 2

2nd Longitude Character

Degrees Longitude	Number	
–20	0	0
–18	1	+2
–16	2	+4
–14	3	+6
–12	4	+8
–10	5	+10
–8	6	+12
–6	7	+14
–4	8	+16
–2	9	+18
0		+20

Table 4
1st Latitude Character

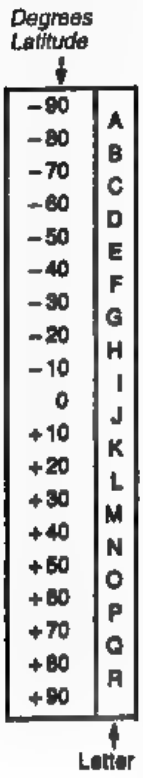
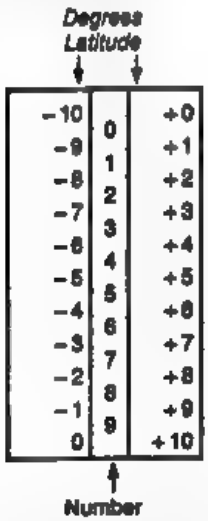


Table 5
2nd Latitude Character



Lettering of longitude begins at 180 degrees west (A) and carries on through the prime meridian and so to 180 degrees east (R). For latitude, lettering begins at 90 degrees south (A) and continues to 90 degrees north (R).

If you have any difficulty, this office has a worldwide locator chart. Just write to the awards manager with SASE. I also have a short BASIC program for determining the six-digit maidenhead locator. ar

CONTESTS

(INFORMATION PROVIDED BY RELEVANT CONTEST MANAGERS)

1992 John Moyle Contest Rules

Phil [illegible] VK1PJ

Once again those who enjoy a weekend in the bush should be planning for the John Moyle field day. This year, as promised, there are no rule changes. The helpful hints received last year showed that there is nothing basically wrong with the rules. However, I would suggest that operators not only read and familiarise themselves with these rules, but they should also read the comments printed with last year's results.

There promises to be quite a bit of activity on the DX front this year with the John Moyle Field Day taking place on the same weekend as the Japan DX contest. Both six metres and HF should be interesting, with maybe even a bit of DX on two metres. When making repeat contacts with stations in the Japan DX contests, please remember they cannot count repeat contacts, hence they may be a bit reluctant to make another contact.

I hope to be on air the weekend prior to the contest — family commitments permitting — to help anyone with rule interpretation etc. Please, if you do have any complaints, submit them by phone or with your entry. My planned schedule is 14.275MHz at 1200 EST and 3.570MHz 2100 EST (approx) Sunday 8 March 1992. The 80m meeting will commence when the VK1 Award Net finishes, on the same frequency as the VK1 Award Net. This is an experiment to try to improve the contest. If it helps, I will do my utmost to continue the practice. For those who do not have HF callsigns, I am sure you can find a way of joining one of the nets, maybe as a second operator. If anyone would like to contact me privately, my home phone number is (062) 29 3260 and at work (062) 80 5966. My home address is in the callbook. Best of luck. See you all on air. I hope to be one of the operators at the VK1 WIA station. Don't worry, I get someone else to check any entry I am involved with.

Aim

1. To encourage portable operation on the amateur bands and is intended to help amateurs become familiar with portable operation and thus assist in training them for emergency situations. The rules therefore have been designed to encourage all amateurs to operate in the field.

Contest Period

1. From 0100 UTC 14 March 1992 to 0759 UTC 15 March 1992. It is intended that this contest shall take place on the third weekend in March each year.

Sections

3. All entries are to consist of one choice from each of the following: eg six-hour, portable, single op, phone, VHF:
   a. 24 or six-hour operation;
   b. portable, home or receiving station;
   c. single or multiple operator;
   d. phone, CW or open mode;
   e. HF, VHF/UHF or ALL bands

Scoring

4. For valid contacts:
   a. Portable HF stations score two (2) points per contact;
   b. home HF stations score two (2) points for contacts with portable stations and one (1) point for contacts with home stations;
   c. all contacts on the 50MHz band score as for HF;
   d. the following scores may be claimed by portable stations operating on 144MHz and higher:
      (1) 0 to 49km score two (2) points per contact;
      (2) 50 to 99km score ten (10) points per contact;
      (3) 100 to 149km score twenty (20) points per contact;
      (4) 150km and greater score thirty (30) points per contact; and
      (5) For each of the 144MHz and higher contacts, the details of the respective station locations are to be supplied. Such details must include either latitude and longitude references for each station or some satisfactory proof showing the distance over which the QSO was conducted. These details must be shown on the summary sheet.

Log Submission

5. Each log must be accompanied by a summary sheet that provides the following information: callsign, name, address, section entered, number of contacts and claimed score.
6. The summary sheet should also note the equipment used, station location and, for multiple operator stations, a list of all callsigns that operated the station together with their signatures.
7. The summary sheet shall include the following declaration signed by the operator or, in the case of a multiple operator station, one of the licensed amateurs who operated the station: "I hereby declare that this station was operated in accordance with the rules and spirit of the contest."
8. Logs should be forwarded to The John Moyle Contest Manager, PO Box 315, Fyshwick ACT 2609 Australia. Logs are to be postmarked no later than 30 April 1992.

Certificates and Trophy

9. At the discretion of the contest manager, certificates will be awarded to the winner

of each portable section. The six-hour certificate cannot be won by a 24-hour station.

10. The President's Cup will be awarded to the Australian station with the highest CW score. The recipient shall be presented with an individually inscribed wall plaque as permanent recognition.

Disqualification

11. General WIA contest disqualification criteria as published will apply to this contest. Untidy, illegible and messy logs will automatically be disqualified.

Definitions

12. A portable station is one which operates from a power source which is independent of any permanent installation, ie batteries, portable generators, solar and wind power.
13. The size of any portable station shall be restricted to approximately that of an 800m diameter circle.
14. A single operator station is one where all operating of the transmitting apparatus is done by one operator only.
15. A single operator may only use a callsign of which he/she is the official holder. A single operator may not use any callsign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multi-operator entry.
16. A multiple operator station is a station operated by more than one operator.
17. Only one callsign may be used from a multiple operator station.
18. Multiple operator stations may use only one transmitter on a given band at any one time, regardless of the mode in use.
19. Multiple operator stations are to use a separate log for each band.
20. A club, group or organisation, by default, is considered a multiple operator entry.
21. No apparatus may be given to help the single operator prior to and during the contest. The practice of clubs or groups providing massive logistic support for a single operator is totally against the spirit of the contest. Offenders will be disqualified and possibly banned from participation in the contest for a period of up to three years.
23. SSB, FM and AM all count as phone.
24. CW and RTTY are both regarded as CW.
25. It is not expected that any other modes would be used in this contest, but if they are, they shall be regarded as CW.
26. All amateur bands may be used with the exception of the 10, 18 and 24MHz bands.
27. Cross-band contacts are not permitted, except by satellite repeater systems.
28. Cross-mode contacts are not permitted.
29. Contacts made via terrestrial repeater systems are not permitted. However, repeaters may be used to arrange a contact on a simplex frequency
30. Portable stations are permitted to make repeat contacts and claim the appropriate points, provided that at least three (3) hours have elapsed since the previous contact with that station on the same band and mode.
31. Home stations may not claim any points for repeat contacts.
32. Stations are to exchange ciphers consisting of the RS/RST and a number commencing at 001 and incrementing by one (1) after each contact.
33. Portable stations shall add the letter "P" to their own cipher, eg 59001P for the first contact.
34. Multiple operator stations are to commence each band with 001.
35. Receiving stations must record the ciphers send by both stations being logged. QSO points will be on the same basis as for home stations, unless the receiving station is portable.
36. The practice of selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest and shall result in immediate disqualification. The period of operation commences with the first contact on any band or mode and finishes either six or 24 hours later.

Commonwealth Contest 1992 — Rules

1. **General:** The Commonwealth Contest is intended to promote contacts between stations in the British Commonwealth and Mandated Territories.
2. **Eligible entrants:** Licensed radio amateurs within the British Commonwealth or British Mandated Territories. Single operator entries only will be accepted and entrants may not receive any assistance whatsoever during the contest, including the use of spotting nets or other assistance in finding new bonuses. Entries will not be accepted from Headquarters stations, nor from stations using GB or other special event callsigns, or operating maritime or aeronautial mobile.
3. **When:** 1200 GMT Saturday 14 March 1992 to 1200 GMT Sunday 15 March 1992.
4. **Sections:** (a) multi band
   (b) single band

   Single band entrants should claim points for contacts made on one band only, but are requested to submit details of QSOs made on other bands, for adjudication purposes. Multi band entries will not be eligible for single band awards.
5. **Frequencies/mode:** CW only in the 3.5, 7, 14, 21 and 28MHz bands. Entrants should operate in the lower 30kHz of each band, except when contacting novice stations operating above 21030 and 28030kHz. Crossband contacts will not count for points or bonuses.
6. **Contest Exchange:** RST and serial number, commencing with 001.
7. **Scoring:** Contacts may be made for points with any station using a British Commonwealth prefix (see accompanying list), except those within the entrant's own call area. Note that for this contest, the entire UK counts as **one** call area, and therefore UK stations ay not work each other for points. Each completed contact scores five points, with a bonus of 20 points for each of the first three contacts with each Commonwealth Call Area, on each band.
8. **Headquarters Stations:** A number of Commonwealth Society HQ stations (although not eligible as entrants) are expected to be active during the contest and will send HQ after their serial number to identify themselves. Every HQ station counts as an additional call area (and therefore attracts the 20-point bonus) and entrants may contact their own HQ stations for points and bonuses.
9. **Logs:** Separate logs are required for each band. Entries should be typed or written in ink on one side only of standard (A4) size paper or pre-printed log sheets, and should contain 40 QSOs per page. Columns to be headed: Time GMT; callsign of station worked; RST and serial number sent; RST and serial number received; bonus points; points claimed. Computer-generated logs are welcomed provided they are formatted as above.

   Duplicate contacts must be clearly marked and not claimed for points. Each unmarked duplicate contact found for which points have been claimed will result in the deduction of 55 points. Entries containing more than five such duplicates will be liable to disqualification.

   Each entry must be accompanied by a cover sheet indicating the section entered and the scores claimed on each band (also don't forget details of equipment, and your correspondence address!). Entrants making more than 80 QSOs are requested to include a checklist of the callsigns appearing in the log, sorted into alphabetical order and with either the serial number sent or the time of contact beside the callsign.
10. **Declaration:** Each entry must be accompanied by the following declaration, signed and dated: "I declare that this station was operated strictly in accordance with the rules and spirit of the contest, and I agree that the decision of the Council of the RSGB will be final in all cases of dispute."
11. **Address for logs:** RSGB HF Contests Committee: c/- S V Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, UK.
12. **Closing date for logs:** Logs should be posted to **arrive** before 19 April 1992. Overseas entrants are advised to forward their logs by airmail, as late entries may be treated as checklogs.
13. **Awards:**

(a) **Multi band** — The Senior Rose Bowl will

be awarded to the overall leader, and the runner-up will be awarded the Junior Rose Bowl. The Col Thomas Rose Bowl will be awarded to the highest placed UK station. Certificates of Merit will be awarded to the third-placed entrant overall, and to the leading station in each call area.

(b) **Single band** — Certificates of Merit will be awarded to the leading overseas and UK entrants on each band.

Receiving Contest

Rules may be obtained from VK3ZC QTHR.

Call Areas

The following call areas are recognised for the purpose of scoring in the 1992 Commonwealth Contest:
A2, A3, AP, C2, C5, C6.
G, GB, GD, GI, GJ, GM, GU, GW (all one area).
H4, J3, J6, J7, J8.
P2, S7, T2, T30, T31, T32, T33.
V2, V3, V4, V5, V8.
VE1, CY0 (Sable), CY0 (St Paul), VE2, 3, 4, 5, 6, 7, 8.
VY1 (Yukon).
VK1, 2, 3, 4, 5, 6, 7, 8, VK9L, 9M, 9N, 9X, 9Y, 9Z.
VK0 (Heard), VK0 (Macquarie), VK0 (Antarctica).
VO1, VO2.
VP2E, VP2M, VP2V, VP5, VP8 (Falklands), VP8 (S Georgia), VP8 (S Sandwich), VP8 (S Shetland), VP8 (Antarctica), VP9, VQ9, VR6, VS6.
VU, VU4 (Andaman), VU7 (Laccadive).
YJ, Z2, ZB2, ZC4, ZD7, ZD8, ZD9, ZF, ZK1(N), ZK1(S), ZK2, ZK3, ZL0, 1, 2, 3, 4, 5, 7, 8, 9.
3B6/7, 3B8, 3B9, 3DA.
4S, 5B4, 5H, 5N, 5W, 5X, 5Z.
6Y, 7P, 7Q, 8P, 8Q, 8R.
9G, 9H, 9J, 9L.
9M2, 9M6/9M8, 9V, 9Y.
GB5CC, RSGB, HQ Station, VK3WIA, VIA HQ.

All calls operated from Commonwealth controlled areas of the Antarctic, VK0, VP8, ZL5 etc, count as one call area.

BERU 1991

A coverage of the 1991 results should appear in March *Amateur Radio*, but it seems 9H1EL, ZD8VJ and VE7CC took out the major placings, while VK6LW 5, VK2APK 6, VK2BF 7 and VK4XA were the leading VKs.

RD Results — Corrections

VK3EDF 16, should be in VK3 VHF section.

VK4ZGL 30, should be in VK4 VHF section.

VK7SA 88, delete entry.

■■

VHF/UHF – AN EXPANDING WORLD

ERIC JAMIESON VK5LP – PO BOX 169 MENINGIE 5264

All times are UTC

Some New Beacons

Freq	Callsign	Location	Grid square
50.015	PJ4B	Bonaire	FK52
50.015	4N3SIX	Slovenia	JN76**
50.018	V51VHF	Namibia	JG87
50.019	P29BPL	Papua NG	QI90
50.027	9H1SIX	Malta	JM75*
50.057	VK7RSB	Hobart	QE37**
50.092	HC2FG	Ecuador	EI97*

*indicates the beacon has been reactivated
** indicates a new beacon

There are no 2m beacons active in Melbourne except VK3RCW on 144.950, the CW training beacon. The Ballarat beacon on 432.535 is the only one operational on 70cm in VK3. VK6RTW on 52.565 is QRT.

432.450 VK5VF Mount Lofty PF95. This new beacon has a power of four watts ERP from a 6dB gain antenna with its main power concentrated from about 280 degrees through south to the south-east, and uses FSK keying. It provides a very strong signal at Meningie over the 120km path.

1296.450 VK5VF Mount Lofty PF95 is another new beacon with about one watt to a four-times waveguide radiator. At the time of writing no signal report is available as it will not be installed until 11/1/92. The present VK5 6m and 2m beacons have been taken out of service for upgrading after performing faithfully for more than 25 years.

Six Metres in Europe

Ted Collins G4UPS has advised the following: VK stations worked into Europe on 4, 5, 7, 10, 11, 12, 13, 15, 17, 18, 20, 21, 24, 25, 27 November, with those most heard being VK3OT, VK6PA, VK7JQ, VK8ZLX, VK8RH, VK2QF and some VK4s.

Ted adds the following items of interest: French Guyana has a new station, FY3FV — QSL direct to Box 999, 97300 Cayenne, French Guyana. Also, for PJ9EE, QSL via YB3CN. New station in Morocco is CN8BA in IM63. QSL direct to Mohamed Bouhannana, 114 Rue Chabab A Al Alia, Mohammedia, Morocco. 9X5NH is now operating from Rwanda.

SM7AED advised that Estonian operators now have access to six metres, and SM7FJE has already heard ES5IT. Cedric CT3FT from Madeira will activate six metres on receipt of a transverter from the UK. Czechoslovakia has been granted access to six metres from 15/12/91, with possible restrictions to some OK1 and OK2 operators due to TV stations. *(Subsequent information tends to indicate that the start-up date for OK1 and OK2 was, in fact, 1/1/92 ... 5LP).* QSL route for OE2UKL is Kurt Ullmann, Sonnenweg 13, A-5162 Obertrum a See, Austria. From Malawi 7Q7TT in KH74 is now active, also 7Q7CM, 7Q7LA and 7Q7RM. A possible new station from Cuba is CO7RG. Joel CN2JP reported that on 15/11 at 1800 he had a 6m CW QSO with JW0A in Svalbard via the South Pole!

Don PY5ZBU has now confirmed 131 countries on six metres. He struck misfortune when he lost more than 100 QSL cards en route to the ARRL for the first ever DXCC on six metres. How discouraging. *(Maybe VK operators should deliver their cards personally to the ARRL when their time arrives ... 5LP).*

One comment by G4UPS which appealed to VK5LP for its fairness and consideration for others less fortunate, was that on 2/11 he heard CX8BE, LU8AJK, LU8AHW, LU3DCA, LU7DZ, HC5K, HC1BI, PZ1AP, 9Y4VU, PT9FH and several weak PU/PY stations and PY5CC at 5x9, **"As I had worked most of these stations before, I left them alone."** Very commendable!

At 1125 on 2/11 9H1CG worked KP2A, KP4 and PJ9. 8/11 at 1120 5V7JG (Togo) and TU2OJ (Ivory Coast) both 5x9 working into Europe. 14/11 at 1422 XN1YX turned out to be VE1YX using a special prefix. 17/11 at 1909 G4UPS worked 9J2HN in Zambia at 559.

There are now 127 Swedish stations on the current list with prefixes SK0, SM0, SM1, SM2, SM3, SM4, SM5, SM6, SK7, SM7, SI8 and SJ9. Information from SM7AED and G4UPS.

More from Europe

There seems little doubt that if you want to work consistent 50MHz DX, you should move to Europe, or at least the British Isles! Did you know that at least 120 countries have been worked on 50MHz so far from the UK? The way they do it is this typical example from Geoff GJ4ICD on Jersey Island for 2/11/91 who says *1100 UTC: What an opening! FY7 beacon in at 9+. The band was open from 1100 to 1430 when I went QRT, all signals were S9++ even the Ws via scatter; worked lots of PYs 2, 5, 7, 9. LU, PT9FH, PP5WL, PJ9EE, HI8A, VE1YX, W1JR, P43AS, PJ4/WA3LRO, PJ2KI, TI2HL, PJ2BR, K1JRW, N3BBI, W4s, W2s, CX8BE, many many LUs, HC5K, CN8ST, 9L1, YV4DDK, YV4AB, KP4EOR, KP4EIT, KC5M and missed CE, CP6, YN and YS!* Does the man have time to eat? ... 5LP.

Geoff had good propagation to extended parts of the world on almost every day through November, although he considered three of his October contacts as outstanding — 14/10 to VK2FLR, which gave him the British Isles distance record of 16235km; 18/10 to VK5NC and VK3LK. On 31/10 he worked ZA1ZLZ and ZA1ZDB in Albania for a GJ first and a new

country. *(Note: Unfortunately, it seems likely these contacts will not be counted for DXCC as ZA1A was the only station permitted operation from Albania and this was limited to 20 metres. There may be more on this later ... 5LP).*

Other bits from Geoff GJ4ICD and *The UK Six Metre Group Newsletter* include that Gerrard 5V7JG from Togo came on six metres for the first time on 21/9/91, and that day worked 9H1, SV, TA, I, A22 and PY. He runs 25 watts to a five-element beam. On 28/9/91 Gerrard made 270 QSOs with Europe, and during his first week on the air worked 20 DXCC countries in three continents! He expects to operate from there until February 1992.

Julio D44BC has indicated he will try to be more active on six metres in future. Edgardo YS1ECB from El Salvador is still active and has been working the TE path to South America. As Dave 9L1US has left Sierra Leone, that leaves the Radio Club beacon 9L1SL only. Dave will reappear in Botswana in February 1992, but will be a long way from A22BW.

There seems to be a difference of opinion between the ARRL and the RSGB Awards Managers over 5NO, 3X1 and TK. The ARRL will accept them, but the RSGB will not! Ian G4OUT says that no foreign nationals visiting TK (Corsica) and operating from there will count for any 50MHz awards, as no PTT permits were issued. IT9 (Sicily) is acceptable to the RSGB but not the ARRL.

The absolute dedication to amateur radio and six metres in particular is shown by the fact that Lawrence GJ3RAX and Geoff GJ4ICD between them have undertaken the construction of five 50MHz beacons, and have also requested the return of several beacons which are no longer in use so they may be deployed elsewhere.

The UK Six Metre Group Newsletter says there are now 45 countries in Europe activated on six metres with 16 countries yet to be permitted operation. Six metres from Poland seems some distance away. LA/3A2 (Monaco) has been worked on six, and there is a possibility HA (Hungary) may yet come on.

The Australian Scene

As reported above, a limited number of Australian amateurs has been sharing in F2 DX contacts entering from both sides of the country. There were many openings to Europe during November, with these tapering off in December, but not entirely disappearing.

On 26/12 Steve VK3OT worked YU and SM, and from then through to 6/1 to him there have been almost nightly occurrences of small openings to Europe, perhaps for half an hour or so from about 0830, a typical one being on 6/1 to Finland when Steve worked OH3MM, a much sought after contact with the President of the Finland Amateur Radio Society. There was also an OG1 which appeared to be a prefix for a special occasion. VK3LK and VK5BC have been heard sharing these contacts, which at times were made difficult due to the number of VK stations on Es using the 50.110 DX calling frequency.

During November there have been some good Es openings. VK4, 6, 7 and 8 have been prominent in VK5, especially on 26/12 at 0130 when VK8ZLX was heard with a rock crushing signal! On 11/11 VK5RO worked W5 and W7; on 17/11 VK5BC worked PA0 and ON4. On 4/12 KH7 Kure Islands was worked by VK3, 4 and three VK6s. On 15/12 VK4s spread over most of their eastern coastline were working ZLs. JAs were still almost a daily occurrence into VK5, mostly around 0200, but not for long periods.

On 4/1 for most of the day Es provided VK1, 2, 3, 4, 6, 7 and 8. On 6/1 ZL2TPY and others were involved in a big opening to W when many states were worked.

Two Metres and Above

There have been some good 2m contacts. On 3/12 VK5ZVS using 10 watts FM from Whyalla contacted VK7NRC. VK5AKK on 23/12 heard the Sydney beacon VK2RSY at 0916, and on 24/11 at 0908 heard the Cairns beacon VK4RIK. On 4/12 he had a good contact with VK6AS at Esperance.

Mark VK5EME reports active stations during the past month have included VK5s AKK, AKM, RO, ZDR, AVQ, PO, ACY, NC and EME and VK5KK from 29/12. With the start of the Ross Hull Contest on 22/12, contacts were exchanged with VK5ZVA at 0730 on 144 and 432; 1030 VK5PO portable at Kapunda, 144 and 432, then same with VK5AKK. At 1050 VK5AKM on 144, 432, 1296 and 2304, followed by VK5ACY and VK5EN on 144. On 23/12 from 1030, 144 contacts with VK5MC, VK5AVQ, VK5PO, VK5ZGC, VK5ACY and VK5KAF (both on Kangaroo Island), VK5ZPS and VK5NC.

A big surprise awaited VK5ZDR, VK5AKK and VK5EME who were home on Christmas Day when, between 0640 and 0710 144MHz opened to VK4 (up to 2000km) with 5x9 signals to VK4s QV, TDR, LE, ZWH, ZDO, DH, ACE and VK3ZQB, followed later at 1209 with VK5AKK on 144, 432 and 1296.

From 26/12 Mark VK5EME decided to operate portable from a high site at Summertown in the Mount Lofty Ranges, taking equipment with him to work on 144, 432, 1296 and 2304MHz! From 0442 he worked VK5s AVQ, ZDR, RO, AIM, ZYK and VK3AOS, all on 144 and 432, plus VK5AVQ on 1296. Similar results on 27/12, plus VK3YLV also on [illegible].

Obviously by 28/12 Mark had stirred the pot somewhat and was amazed at the number of VK3s who had come out of the woodwork to work him. He had contacts, mostly on 144 from 2123 with VK3s YLV, UM, AOS, AFW, DUQ, LK, DUT, BRZ, TG, AIH, AMZ, AXH and VK7XR on 144 and 432 and VK7DC on 432. VK5NY and VK5NC were there also, the latter on 144, 432 and 1296. VK3s YLV, AFW and AOS were also on 432. From 0932 a string of VK5s were worked, including VK5AKK on 2304.

VK5EME's final effort was on 29/12 from 2249 to 2336 to VK3AUG, VK3UM, VK3AOS and VK5s NC, NY, DK, AVQ, ACY, AKK and from 0916 VK5s ZBK, AKK, AIM, AVQ, AKM and KK, the last two being worked on four bands.

During years past VK5LP has operated portable on many occasions, and I know the logistics required to set up a station to work on four bands. Each day it took Mark VK5EME three quarters of an hour to travel to his chosen site, then set up his gear and be operational, preferably by 2100 UTC or 7.30am local time, then pack up and go home after 10pm local and do the same thing again the next day. That's dedication, and I am glad to note he was rewarded with some good contacts on all bands.

EME News

Doug VK3UM reports on his 70cm EME activities for 23 and 24/11/91. Faraday rotation locked him out of the European window. Despite this, his final tally was 68 contacts which included 14 initials, bringing his initials tally to 164.

New stations worked on 23/11 between 1115 and 1329 were N2IQU, AA4TJ, ZL3AAD, N7ART, W0KJY, W7HAH, K3EAV, KB0HH, WA6BJE, WA9FWD and from 1755 to 1851 OK1KIR, JR4AEP, DL9KR, F1FEN and DL9EBL. On 24/11 at 1236 K5AZU, 1308 KB4WM and 1858 F2TU. Signal levels were between 439 and 569, which seems to indicate reasonable conditions.

Doug recently used fine emery paper to polish the elements of his array and immediately ran into complaints from the golfers next to his property who claimed the glare from the aluminium was upsetting their view of the course. A new course rule was added to allow for a ball drop without penalty to avoid the glare! Did you know VK5LP is less than 200 metres from a golf course but I don't have such a large array!

General and Closure

This month there is a lot of news from overseas, particularly Europe, and there will be again next month. I consider it more valuable at the moment to tell readers what is still around to be worked rather than reporting VK contacts to countries already worked, although VK reports are always welcome. Because of their locations, G4UPS and GJ4ICD have already worked hundreds of stations, and are now prepared to do more listening on six metres and report what new stations may be appearing in the future, and for this we should thank them.

Two thoughts for the month *"I don't want*

everyone to like me; I should think less of myself if some people did" and *"You can tell more about a person by what he says about others than you can by what others say about him".*

73 FROM THE VOICE BY THE LAKE

50-54 MHz DX Standings

DXCC countries based on information received up to 20 December 1991. Crossband totals are those not duplicated by two-way contacts. A callsign cannot be displaced from its existing position except by another with a higher confirmed number.

Column 1: 50/52MHz two-way confirmed contacts
Column 2: 50/52MHz two-way claimed as worked but not confirmed
Column 3: Crossband 50/52MHz to 28MHz confirmed
Column 4: Crossband 50/52MHz to 28MHz worked
Column 5: Countries heard on 50/52MHz

Callsign	1	2	3	4	5
VK4ZJB	84	86			4
VK3OT	78	81			
VK4BRG	78	82			
VK2QF	67	74			
VK4ALM	65	67			
VK2BA	62	63		4	
VK4ZAL	58	64			
VK6ZLX	45	60		1	
VK3AMK	45	47			
VK8GB	42	42			13
VK6HK	41	42			4
VK5RO	39	48		3	
VK3AWY	34	36			
VK5LP	32	33			9
VK3NM	31	34			
VK3AUI	31	31			
VK6RO	31	32		1	12
VK2DDG	25	26		2	13
VK4KHZ	23	34			
VK3XQ	23	25			2
VK6PA	23	43			
VK4TL	22	23			
VK2KAY	21	23			
VK2BNN	20	21			
VK9LG	20	20			
VK4BJE	19	25			
VK4KAA	19	20			
VK7JG	18	20			2
VK3TU	17	19			
VK2ZRU	16	19			4
VK4ZSH	16	16			
VK9LE	14	14			
VK6DX	10	10		1	
VK5KL	06	11		1	16
Overseas					
JA2TTO	48	48			8
YJ8RG	25	25			

The next list is planned for the August 1992 issue. Copy, additions or alterations to me by 15 June, please.

As in the past, where I believe a situation determines, I reserve the right to seek confirmation of any claimed QSLs. In the meantime, I thank those contributors who continue to support their claims with photocopies of QSLs or have them certified by other amateurs. It helps!

ar

FTAC NOTES

JOHN MARTIN VK3ZJC FTAC CHAIRMAN

Data Base

This issue contains an updated version of the beacon and repeater data base. Most of the changes since the list was last published in the Call Book have been to the VK2 and VK4 lists. I would be grateful if all beacon and repeater licensees could check the information in this issue and notify any changes or corrections to me as soon as possible. Please send details to FTAC, PO Box 300, Caulfield South, Vic 3162. Alternatively, any information can be sent by packet to VK3ZJC@VK3BHS.

Channel 5A Raises Its Second Ugly Head

I have recently noticed strong QRM on the lower end of the 2m band. This is due to an ABC TV translator 100km away changing over to stereo sound. The second audio subcarrier is on 143.990MHz, and with 50kHz deviation it extends well into the 2m band.

This situation will become more serious as all ABC stations change over to stereo, and it will be particularly severe in areas such as Newcastle. I believe the 5A station there has a 25kHz positive offset, therefore the second audio carrier is on 144.015MHz.

There will also be a parallel situation on six metres, with Channel 0 stations radiating signals within our exclusive 52-54MHz allocation.

I would appreciate any information on TV stereo interference from readers. Amateurs living in Channel 5 areas may also be able to advise whether their local TV stations are radiating interference in the 108MHz aircraft band.

ar

ALARA

JENNY ADAMS VK3MDR

Belated New Year's greetings to all. Somehow, in the Christmas season, I missed the deadline (now they are written on the calendar). Welcome to new members Maxie DJ4YL, Pixie K2KPC, Irene Wilson, Vicki VE7DKS, and rejoining by Joy VK4JOY.

Start saving, as we now have a date for the ALARAMEET. It is to be on 2-3 October 1993, and will be held in Castlemaine, Victoria.

From Jenny VK5ANW:

Stop-Off in New Zealand

On the way back to Australia from our UK/USA trip, my daughter, Wendy, and I had a six-hour stop-over in Auckland between flights. I had earlier suggested that perhaps some of the New Zealand YLs might like to come out and meet us, but had been put off by someone who told me "it would be too hard getting in and out through Customs". So, you can imagine my surprise when, at about 7.30am on Thursday 1 October, I was paged and told to pick up a telephone. The voice at the other end informed me there was a lady with him with whom I had spoken on "ham radio", and the next moment I was talking

L to R: Cecilia ZL1ALK, Jenny VK5ANW and Alma ZL1WA at Auckland Airport on 3 October 1991.

with Alma ZL1WA. Alma said that Celia ZL1ALK was also on her way so, at that point, I decided perhaps I had better make the effort and find out how to get through Customs. With the help of several very nice officials we were soon face to face with Alma and Celia.

After a cup of coffee, Celia presented me with a WARO teaspoon, before having to head off to work. Alma then suggested that as we still had three and a half hours to go, we might like to take a drive around Auckland's suburbs to break the monotony of sitting in the airport. To this we readily agreed, and were soon enjoying some of their magnificent views. All too soon we were heading back to the airport, where Alma gave Wendy and me each a calendar with views of NZ, and a map of Auckland so we could see where we had been. I would like to convey my thanks to Alma and Celia for getting up at that unearthly hour and giving us a pleasant and unexpected end to our wonderful trip.

Marie VK5BMT, our president, enjoyed her wandering around Australia, and for the records a few more faces to put to callsigns with whom you may have made contact

The 16th Australian Scout Jamboree held in Ballarat has just finished. My husband Philip VK3JNI worked in Supply & Transport, and it was terrific to be able to talk to him on 80 metres most evenings. Yet another great reason for being an amateur radio operator. I don't as yet have a report on the Jamboree amateur station VK3SBJ.

L to R: Mavis VK3BIR, Maria VK5BMT and Coral VK8KCH pictured at Hibiscus Shopping Centre, Darwin, on 4 September 1991.

Till next month, with more on the Jamboree.

33/73

AMSAT

BILL MAGNUSSON VK3JT – 359 WILLIAMSTOWN RD YARRAVILLE 3013
PACKET VK3JT @ VK3BBS

National Co-ordinator
Graham Ratcliff VK5AGR

PACKET VK5AGR @ VK5WI Please take note of the AMSAT information nets.

AMSAT AUSTRALIA net:

Control station VK5AGR

Check-ins commence at 0845z on Sunday nights

Bulletin commences at 0900z

Frequencies 3.685MHz or 7.064MHz. At present 7.064MHz is used.

AMSAT SW Pacific net:

2200z Saturday on 14.282MHz

Experienced satellite users and newcomers alike are welcome on the nets. A large body of experience is on hand to answer queries. Listen to the WIA Divisional broadcasts for regular AMSAT information.

AMSAT Australia Newsletter and Computer Software:

Satellite users, whether experienced or newcomers, will benefit by subscribing to the AMSAT Australia newsletter and software service. The newsletter is published monthly by Graham VK5AGR. Subscription is $20 payable to AMSAT Australia, addressed as follows: AMSAT Australia, GPO Box 2141, Adelaide 5001

The newsletter provides up-to-date information on all current and planned satellite activity. Graham also provides a first class software service for satellite users. New software is reviewed regularly in the newsletter.

AO-10 Anniversary

Veteran amateur radio spacecraft Oscar-10 was launched in June 1983. Despite a lot of drama it's still going strong. So, what's the anniversary? Read on. Known as phase 3B during design and construction, it followed the disastrous launch of phase 3A which ended up on the sea-bed taking a lot of broken hearts and dreams with it. Fortunately those in charge, being made of stern stuff, saw to it that 3B (Oscar-10) went ahead and the launch was successful. The whole amateur radio satellite community breathed a sigh of relief. Oscar-10 had a design life of about five years. It was a wonderful device. I can remember working it near apogee, 38000km away with only 100 milli-watts of uplink power into a 20-turn helix on the 70cm band! It became apparent soon after launch, however, that the main memory chip was gradually being corrupted by radiation. Due to a problem during final positioning its orbit wasn't ideal and it was spending more time than was intended in and around the Van Allen belt. As time went on, less and less memory was available to the control stations, and by December 1986 the spacecraft was virtually out of control. No transponder schedule could be implemented, and control stations could only sometimes command the mode B transponder on and off. But that was over five years ago. No-one suspected that Oscar-10 would still be operating in 1992, but it is, and the fifth anniversary of that event is well worth celebrating. The mode B transponder switches itself on and off as power becomes available. Twice a year, the sun angles are favourable and the old veteran springs into life for three months or so. James Miller's extrapolation of the last known attitude allows us to have a pretty good idea of squint angles and, from observations by Graham VK5AGR, it appears that at most times the omni-directional antennas are in operation. Excellent contacts can still be made via Oscar-10, not half bad from a spacecraft that's been out of control for five years.

AO-21 Problems

The "user pays" principle strikes again:

Oscar-21/RS-14/Radio-M1/Rudak-2 (let's just call it AO-21), a joint project of Amsat-DL and Amsat-U, was launched on 29 January 1991 from Plesetzk, USSR. It is a "sub-tenant" (I guess that means that it's bolted on) to a GEOS class Russian geological and scientific research satellite which is called "INFORMATOR-1" Until recently all Russian military and civilian satellites were controlled from a main command centre under military

control. Now it seems the centre has been converted into a civilian organisation, and it has to be — wait for it — cost efficient. This means that control has to be **paid** for be the user AO-21 has been placed in DUTY mode with only a CW beacon operating on 145.948MHz. The controllers are refusing to command any part of INFORMATOR-1 until the user pays, and that includes AO-21. Amsat-U an Amsat-DL are in discussion with authorities to resolve this problem. Stay tuned and keep your fingers crossed!

UoSAT-2 (UO-11) Report

UO-11 bulletins have returned. It was carrying a Christmas greetings message in December. Several times recently it has been switched to full-time telemetry frames. Using a program like DTLM and a G3RUH demodulator, it's fascinating to watch the engineering data being updated in real time as the satellite goes over your QTH. You can tell exactly when it makes the transition from daylight to darkness or vice-versa, as it often does in VK. Now there's a very real check of your tracking software and hardware. You can confirm the tumble rate given in the diary data or watch the 60 analogue and 96 digital channels being constantly read and updated on the telemetry stream. Since there are a number of formats and you're never quite sure just what type of telemetry is going to come over, it's wise to record the audio signal whilst decoding for playing back several times through the demodulator after the pass. Signals from UO-11 are strong enough to receive on a non-directional antenna if you have a quiet location. Beacons are on 145.825MHz, 435.025MHz and 2401.5MHz. On one occasion during our January mountaintop expedition the telemetry indicated that all three beacons were commanded on at the same time. This is unusual. The 435MHz signal was very strong. We had no gear for listening on 2.4GHz, so I can't comment on signal strength etc. Can anyone help?

Siderial Times

Some early tracking programs, particularly those based on Dr Tom Clark's "Basic orbits", require a variable called GMST or GST or G2 to be updated each year. This is the Greenwich Mean Siderial Time calculation. It is used to compute Earth-based co-ordinates from right ascension figures. The value of GST for 1992, Jan 0, 00:00 UTC is 0.27477847 I can give you a listing of a basic program to calculate these figures if you contact me.

The next few years are as follows:

1993 GMST = 0.276853278
1994 GMST = 0.276190177
1995 GMST = 0.275527075

It's a figure derived from the difference between the Earth's rotation rate in respect to the Sun and the background starfield. Don't be alarmed! We aren't slowing down that much. The figure oscillates around a mean over a period of several years. Our real slow-down rate is very much less than that.

Satellite Activity for October/November 1991

1. Launches

The following launching announcements have been received:

Intl No	Satellite	Date	Launch Nation	Period min	Apg km	Prg km	Inc deg
1991							
075A	INTELSAT VI F-1	Oct 29	USA	716.1	35738	453	4.4
076A	USA-72	Nov 08	USA				
077A	COSMOS 2165	Nov 12	USSR	113.9	1436	1396	82.6
077B	COSMOS 2166	Nov 12	USSR	114.0	1440	1408	82.6
077C	COSMOS 2167	Nov 12	USSR	113.9	1437	1402	82.6
077D	COSMOS 2168	Nov 12	USSR	113.8	1434	1392	82.6
077E	COSMOS 2169	Nov 12	USSR	113.8	1432	1385	82.6
077F	COSMOS 2170	Nov 12	USSR	113.8	1432	1385	82.6
078A	COSMOS 2171	Nov 20	USSR				
079A	COSMOS 2172	Nov 22	USSR				
080A	STS-44	Nov 24	USA				

2. Returns

During the period 57 objects decayed, including the following satellites:

1972-011A	COSMOS 476	Oct 25
1987-012A	ASTRO-C	Nov 01
1991-047B	LOSAT-X	Nov 15
1991-066A	COSMOS 2156	Nov 17

BOB ARNOLD VK3ZBB

HOW'S DX

STEPHEN PALL VK2PS – PO BOX 93, DURAL 2158

In the "good old days", say 30 years ago, DXing was a pleasure. One chased a few rare ones here and there, as individual nets, lists and DXpeditions were rare. Today, DXing is still a pleasure, but it is really hard work. Both the DX station and the ever-increasing number of DXers are under pressure and strain. The magical number of DXCC countries — 323 at present — chased by the many thousands of hopefuls and their sometimes undisciplined behaviour, sometimes questions the value of these contacts. Today, expeditions go to the remotest and most hazardous places on Earth in the name of "DXing". Transport, equipment, power, fuel, food, even weapons (for "protection") etc have to be organised. These expeditions cost tens of thousands of dollars and sometimes even hundreds of thousands of dollars. Voluntary donations and contributions, in both equipment and cash, are eagerly sought. QSLing must be direct, with appropriate return postage and the occasional "green" stamp. However, there is no guarantee that one gets a return card on every occasion, as many DXers can attest. One can be considered to be lucky if his or her return rate reaches 80 percent.

Why all this rush? All this eagerness? All this waiting? Why all the bleary eyes of the sleepless nights? Just to get a piece of printed paper which says that we worked 300 DX countries, or our name will now appear on an honour roll? To whom do we want to prove this fact? To ourselves? Most unlikely! One should know how many DX countries one has worked and, after all, there are the cards to prove it! To prove it to others: friends and other DXers; to the world? To make others jealous?

It is a sorry state of affairs and sign of changing times that today human endeavour and striving for excellence are not recognised, except when one has a piece of paper to prove it!

Albania — ZA

I was about to forward the material for this issue to the editor, when mail brought a letter which throws some new light on the activity of the ZA1HA station. The six-page letter, which is actually a description of their trip and experiences in Albania, was written by Dodi HA6NF, one of the operators of the station ZA1HA. Space does not permit publication of the letter in full, but here are a few facts in contrast to questionable rumours.

The ZA1HA operation was the result of a joint written declaration of co-operation and a binding contract between the Hungarian Amateur Radio Society (MRASZ) and the Albanian Radio Amateur Society. This document was signed and ratified back in October 1990, after lengthy negotiations which began almost a year previously. In this document, the MRASZ accepted responsibility to build a complete amateur radio station in ZA land

and to train Albanian operators on the site. In return, the Albanians agreed to facilitate the operation of the HA DXpedition in ZA. It is now history that the international expedition ZA1A started the Albanian operation one week before the Hungarians. (See *AR* March, Nov and DEC 1991 issues).

The ZA1HA group was allocated a QTH by the Albanian officials, following a discussion with Mr Agim Zeka, Assistant Minister of Culture, Youth and Sport in Tirana, who has been working on this project since 1990, and Mr Myftar Fana, President of the Albanian Radio Amateur Society. According to HA6NF, the ZA licences which were issued to the Hungarians by the Ministry of Culture, Youth and Sport were the first original licences issued to foreign amateurs — the licences issued by the Albanian PTT came later.

According to other sources, independent of HA6NF, the Albanian Council of Ministers has now taken away the right from the Albanian PTT to issue amateur licences and ordered the army not to hinder amateur activities. Again others stress that, according to present Albanian law, the Ministry of Culture, Youth and Sport is the only authority to issue amateur licences.

The ZA1HA team kept its part of the bargain. They trained operators and left behind a complete working amateur radio club station, which is still in use and which had its licence issued by the same authority as ZA1HA.

HA6NF concludes his letter with the following: "You should know and understand and please tell everybody that Albania is *not the place* where you could operate a radio transmitting station *without a licence!*

There is now a big question mark hanging in the air: Why has the DXCC Board not yet approved the various Hungarian ZA operations? The activity took place in September/October last year, and we are writing now in February 1992. All the necessary documentation is with the DXCC Committee awaiting a decision. When will that be forthcoming?

Sydney City Sesquicentenary — VI150SYD

This is a special event station operated on behalf of the VK2 Division of the WIA during 1992. It will show up on various frequencies at various times, including "nets".

On 20 July 1842 the town of Sydney was elevated from the status of a town — held since 1788 — to that of a city. Throughout 1992, Sydney will celebrate the 150th anniversary of this important milestone in the history of the city with various activities.

The VK2 Division of the WIA, with headquarters in the City of Parramatta, which is part of the greater Sydney metropolis, will participate in these celebrations by activating the special event station, VI150SYD.

The preferred route for all QSL cards will be by direct mail to. WIA Special Event Station, PO Box 1066, Parramatta, NSW 2124, Australia. VK stations should send a SASE; DX stations should include also one IRC or one "green" stamp for return postage. Those who QSL via the Bureau should send their cards to the QSL Manager: VK2WI.

Some of the operators of ZA1HA. L to R: Otto HA1AD, Janos HA8UB, Gyuri Hagnd, Geza HA4XG and Dodi HA6NF.

South Sandwich — VP8

The latest bulletin on this expedition (22 March to 6 April) arrived mid-December. Seven operators are already on the roll; the remaining three will be selected in the next few weeks. All of them have extensive DX, contest, Antarctic and Arctic experience. All the required paperwork was submitted and approved by the ARRL. The ship, *Abel J*, an American research and scientific vessel, is already on its way with the amateur equipment. This ship is now headed into the Antarctic. The team will leave London on 9 March and will sail for the South Sandwich group on 14 March, where it expects to land on Thule Island. There will be four complete HF stations, three linear amplifiers, nine antennas for various bands, three power generators and over 800 gallons of fuel. It is planned to operate from 160m through to 10m and possibly on six, in the SSB, CW and RTTY modes.

The total cost of the expedition is $104,000; each operator is contributing $5000 — the balance has to come from donations from the amateur community. If you have never contributed to such an expedition, please consider doing so now. Send your donation to: Gerry Branson AA6BB, 93787 Dorsey Lane, Junction City, Oregon 97448, USA. The expedition is well aware of the needs of the VK-ZL-Pacific area amateurs, and promised to visit the various nets for this purpose (21205 and 14222). Let's give them a helping hand by digging deep into our pockets.

QSL route: CW and RTTY QSLs go to: KA6V, and SSB QSLs go to: AA6BB. Computer processing is planned, so please do not make multiple contacts on the same band and in the same mode.

Thailand — HS0ZAP

In a note received from Thailand from Lloyd W6KG and Iris W6QL, they advise about their successful operation from Bangkok, as HS0ZAP. John HS0ZAA was instrumental in getting the reciprocal licence for Iris and Lloyd, being the custodian of the club station HS0AC. Vikrom HS1HB, President of RAST, was also a great help. The Colvins were operating from the club station using their equipment and the club antenna systems. They made 1500 contacts with 120 countries. After attending the SEAnet convention in Chiangmai, they proceeded to Vietnam and then to Cambodia, where they started operating as XU8KG.

QSL for HS0ZAP and XU8KG goes to YASME Foundation, PO Box 2025 Castro Valley, CA 94546 USA.

Mount Athos — SV/A

This religious community on the shores of the Aegean Sea (see *AR* January 1991) is recognised as a separate country for DX, and has only one officially approved resident operator: The Monk Apollo, SV2ASP/A, Monastery Dochieriou, GR 63087, Dafni, Greece. Visiting amateurs must obtain a permit from the Council of Government of the Holy Community of Mt Athos. This is rarely given. In April last year, Baldur, a well known German DXer, operated as SY/DJ6SI from Mt Athos, using his universal European CEPT licence. Ever since that operation, there has been a dispute in DX circles whether Baldur had legal permission to operate or not.

In the beginning, the DXXC Desk of the ARRL approved the activity. In August last year the acceptance of Baldur's cards was suspended pending additional information. At the end of October, the DXCC resumed the acceptance of the SY/DJ6SI cards. In November the Monk Apollo, who usually was quite active on the European DX net, became "inactive". Rumours have it that the Chief Abbot of the Holy Community has placed a "no activity" restriction on the monk until the DXCC decision is reversed. Depending from where the rumour originates, one can hear the following "news": allegedly the Greek Ministry of Transport and Telecom was reported to have said that CEPT licences are not valid on Mt Athos. Others say — and this cannot be

verified — that Baldur had permission to operate CB radio from Mt Athos for a family emergency situation; yet again others say the Monk Apollo has written a letter to an important DX Association saying he is absent from the bands "protesting" (against) the recognition of the invalid emission of DJ6SI by ARRL from Mt Athos without the permission of the Holy Community.

On 14 December Apollo made a brief appearance on the EU-DX Net and more or less repeated his protest, but did not take part in the net and stopped transmitting.

It seems the DXCC committee has a number of problems on its hands. It has to resolve the Mt Athos problem and also has to decide whether it will accept the various Hungarian operations in Albania.

However, the basic unanswered question remains. If it is so easy (or "difficult") to obtain permission to operate from Mt Athos, why did the Greek DXers not use the opportunity in the past to do so?

Future DX Activity

* Jon VK4CY was operating again from his home QTH: Lamb Island from 30 December to 18 January, and hopes to operate from there around Easter, mid-winter and spring from the VK4 location. Jon at present is employed in the Sydney area and can be reached on the 2m and 70cm repeaters as VK2CCY.
* Dwight EL2W is now active. He was heard on 18MHz. QSL to: Dwight, Radio Station ELWA, Box 192, Monrovia, Liberia, W Africa.
* The Hungarian boys with their bus (HA5BUS) were active on CW from Tehran for five days as EP/HA5BUS. They are now proceeding to India.
* VK0WD Wayne (VK7WD) — who is on board the supply ship *Icebird* calling at the Casey base and at Macquarie Island — is "icebound" and might not be able to operate due to lack of time. The ship is stuck in solid ice six metres thick; the weather is bad and, at the time of writing, his expected time of arrival at Macquarie is not known. *(Ship now free. Ed)*
* Graham VK0NE is now on Casey Base in Antarctica. QSL to: VK9NS.
* The American/Vietnam XV0 DXpedition has been called off because of licensing difficulties.
* Toensten SM7NFB, who will be in Vietnam for two years, is active as XV7TH. QSL to: SK7AX.

Interesting QSOs and QSL Information

Note: callsign, name, frequency, mode, UTC, month.

* HS0ZAA-John-21004-CW-0810-Nov. QSL to: KM1R: MJ Castellano, 631 Great Hill Rd, Guildford, CT-06437, USA.
* YA2CW - Jacky - 21014 - CW - 0545 - Nov QSL to: F2CW Jacky Calvo, Le Bois de E'ssard, F-16200, Nercillac, France.
* JT1AA-Gan-14009-CW-1210-Dec. QSL to: Gan, Box 138, Ulan Bator 23, Mongolia.
* CN2AQ-21039-CW-0830-Dec. QSL to: Sjoerd Quast, Route de Rabat, PK 18500, Box 40, Tangier, Morocco.
* 7P8SZ-14030-CW-2235-Dec. QSL to: Ray, Box 333, Masero 100, Lesotho.
* J28FO-28010-CW-1220-Oct. QSL to: F6FNU Antoine Baldeck, BP14, F-91291, Arpajon, Cedex, France.
* 9J2SZ-21009-CW-1315-Oct. QSL to: SP8DIP Tad Pawlasek, U1 Alexandra Szymanskiego 36, M10, 23-200 Krasnik Lubelski, Poland.
* T20VJ-14007-CW-1323-Nov. QSL to: G4ZVJ Andy Chadwick, 3 Park Villas, Monkhouse, Cheadle, Staffs ST10 1HZ, England.
* Z2AHS-14009-CW-0430-Nov. QSL to: Box 4119, Harare, Zimbabwe.
* ZK2JD-John-14226-SSB-1113-Nov. QSL to: John Duncan, PO Box 37, Niue via New Zealand.

RTTY News

As usual, Syd VK2SG has sent me quite a list of RTTY contacts going back five weeks. Here are a few interesting ones, but please note the change of format: UTC, QRG, call, mode, QSL info.

* 1001-21087-CU3EM-Paul Borges, Box 158, Angra City, Azores.
* 0332-14082-XQ0X.
* 1122-21083-5V7RC. QSL to: OZ1LLC.
* 0035-14082-VP25EHF. QSL to: KA3DBN.
* 0209-21072-TY1PS-ARQ.
* 2141-14085-J68AS. QSL to: N9AG.
* 0011 14085 TJ1MR QSL to F6FNU
* 2325-21081-J37MB. QSL to: VE7YL.
* 0618-14074-5N8AL. QSL to: DJ2VJ.
* 1534-29089-ZD8LII. QSL to: Steve Hodgson, PO Box 2, Ascension Island, Atlantic Ocean.

Have you sent me a note about the usefulness of this section of the DX column? (See *AR* Jan 1992).

From Here and There and Everywhere

* Australia Post has presented a New Year's gift to those who use its services. Overseas air mail rates to all places in the Pacific Basin and nearby Asia have been increased. Ask for details from your friendly neighbourhood post office.
* Peter VE3PW (*AR* Nov '91) advised on his Christmas card that he will be in VE3 for a few months before going up north again to Zone 2.
* Unconfirmed rumours have it that cards for the MV Island (4J1FS) are being processed and will be posted soon.
* Jack T30JH, after a short visit to the Federates States of Micronesia, callsign used V63JH, returned to Tarawa. Whilst in Ponape, he made about 1000 QSOs, mostly six metres, the majority of them JAs.
* Jeane Claude FT4CW of Crozet has closed his station and returned to France. The new team at Crozet does not have an amateur operator.
* The powerful religious broadcaster HCJB, near Quito Ecuador, celebrated its 60th anniversary on Christmas Day 1991. Beside the religious side of things, the station also features DX programs, news and cultural information and even has a weekly radio amateur segment on its program. Among its broadcast personnel there are a number of amateurs. It is not well known that the cubical quad so widely used by radio amateurs was invented by Clarence Moore, an HCJB engineer, in 1939 to overcome the problems of broadcasting in rarified air at 9300 feet in the Andes. The station's 12 high-powered transmitters were reduced to a mere 1.5kW on 6 December, from 2100 UTC to 0300 UTC on 8 December, to allow the organisation to celebrate this occasion on the amateur bands, activating the special call HC60JB. If you were lucky enough to work them, send your card with return postage to: HCJB, Casilla 17-01-00691 Quito, Ecuador, South America.
* The documentation for Romeo's XY0RR DXpedition has been approved by the DXCC Desk.
* The former "East" German "Y" prefixes will be used until the end of 1992.
* Jack T30JH was probably the last foreign operator who was able to use the C21NI club-station facilities on 3 November last. Jack advises that the activity from C21NI has been suspended and might not resume. The main reason is the abuse of the QSL route by many visiting foreign operators, the majority of whom never left a photocopy of their logbook behind as stipulated on their licence permits. This caused a big problem for the secretary of the club station, who is desperately trying to sort out the multitude of thousands of cards which arrived and are still arriving at the island.

  The Nauruan Government will change the telecommunication laws in 1992, and will consider the proposal that visiting amateurs should be issued with a licence starting with the C20 prefix, and the licence will be valid only during their stay on the island. The licence fee for visitors will reflect a more modern and realistic approach in money terms.
* Dodi HA6NF advised that 90 percent of the direct QSL cards received by HA6KNB for the ZA1HA operation were posted before the end of December.
* Bill Vogel, formerly VK5NVW, advises

that he has acquired a full call: VK5IE. Bill is the contact person for the "CQ" Awards in Australia. Bill's new callsign will not be in the callbooks for a while. Please use his address as shown in the old callbooks (1979-1992) under his old callsign of VK5NVW.

QSLs Received

Note: W=week; M=month; Y=year; FM=from; MGR=manager and its call; OP=operator and/or its call.

Bureau cards received: SV1AEU/5 (2Y FM OP), AP2HA (2Y FM OP), ZC4ESB (1Y 11M FM OP), A41JV (2Y FM OP), VP5B (10M FM OP), JT1BH (9Y FM OP), PJ8T (1Y11M FM MGR K4PI), FO4NS (8M FM OP FD1PLR), HC2HVE (5M FM OP), OF4JK (4Y FM OP).

Direct cards received: ZA1A (4W FM MGR NCDXF), V63JH (7W FM OP), ZA1HA (14DAYS FM OP:HA6NF), VI2RC (3DAYS FM OP VK2DEJ).

Thank You

Thank you to all my helpers, especially to VK2DID, VK2KFU, VK2SG, VK4CY, VK4DA, VK4OH, VK5QW, VK5WO, VK6NE, VK8KV, VK9NS, HA6NF, HS0ZAP, T30JH, VE8PV, ZL2VS, and the following publications *QRZ DX, The DX Bulletin* and the *DX News Sheet.*

Good DX and 73

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EDUCATION NOTES

Brenda Edmonds VK3KT – PO Box 445 Blackburn 3130.

Since I did not manage to have any Education Notes in the January issue (sorry, but a holiday trip intervened) I will now wish all readers all the best for 1992, and look forward to hearing of many more successful candidates at both the initial and the upgrading attempts.

At this time of the year I expect many clubs and groups are planning or starting courses to help new recruits enter the hobby. I have been interested to hear from the WIA Exam Service that most of the applicants for accreditation as examiners are coming as nominations from radio clubs or societies. This is a very pleasing indication of the strength and dedication of the clubs.

However, it does not give any indication of the clubs which are providing classes or other assistance to prepare students for the examinations.

I would like to appeal once again to all those who are arranging any sort of class, course, discussion group, personal tutoring or other assistance to inform their respective Divisions of this fact. Give the Division either the full information of what is arranged, or at least a contact name and address for some member who is prepared to explain what is available.

At the Federal level, all those who enquire about the Amateur Service or the WIA receive a letter and leaflet which give basic information and then direct the enquirer to the appropriate Division. It is most important that the Divisions should be able to follow up by providing information about the location of clubs and the availability of assistance to those who have no contacts of their own.

I have often thought it would also be useful for each Division to have records of members who would be prepared to "sponsor" new recruits by allowing them to visit the shack, talk about amateur radio and ask questions as they try to learn. It would be especially helpful to potential amateurs in areas without local active clubs, or beyond the reach of organised classes. As in most aspects of amateur radio, the urban operators have better access to facilities provided by the Divisions and clubs.

There are many possible candidates, in both remote areas and more populous regions, whose interest is being damped by the inability to get information and help when they are needed. In many cases the help is there, but that is not much use if the candidates cannot find out about it. Please publicise what you have to offer. **73 Brenda**

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SPOTLIGHT ON SWLING

Robin L Harwood VK7RH – 52 Connaught Cres, West Launceston 7250

Events in Europe and the former Soviet Union continue to dominate on shortwave. We are already in the second month, and the continuing inter-communal conflict in the Balkan regions shows no signs of letting up. I believe that monitors in central Europe have been able to follow developments on HF and VHF. At this stage, it is hard to predict what is going to happen, but clearly radio will be involved.

As well, the USSR ceased to exist on 31 December 1991. It was replaced by the Commonwealth of Independent States, a loose confederation of sovereign republics.The largest of these is Russia, then Kazakhstan and Ukraine follow in size. It is anticipated that each former Soviet republic will quickly develop its own external radio service. The future of Radio Moscow is still uncertain, as I write this in early January.The Russian Republic will probably absorb this operation, and senders which formerly carried this station, but happen to be located in other republics, could carry different programming in future. I believe also that Cuba has ceased to relay Radio Moscow programming to North America, although Radio Havana programs are still being broadcast via European sites on HF.

Since the formation of the CIS, private and independent broadcasters have dramatically increased, especially in Russia and the Ukraine. Some are even leasing former Soviet HF senders, yet many are simply hiring air time from the existing domestic networks.

Deutsche Welle in Cologne, Germany, commenced broadcasting via relays in Siberia, late last year. Signals have been good here. The Japanese service is heard on 7380 at 1100 to 1150 UTC. As well, the German service is on 7340 between 1000 and 1400 UTC. Beijing also utilises European sites to relay its programs. I expect these will continue, although the co-operative arrangements were made with Soviet authorities.

However, I expect that Russian sites will be mainly employed Other republics, such as the Ukraine and the Central Asian republics could be sensitive about relaying foreign broadcasters.

I also expect that we could have a lot of new prefixes on amateur radio during the next 12 months. If the six republics making up Yugoslavia become independent nations,there will be six new countries on the DXCC The former Soviet republics did count as separate DXCC listings, but they presumably will want to remove signs of the former Soviet callsign structure .Also I have noticed that Japan has seemingly exhausted its J suffixes and has commenced using alphanumeric callsigns from its ITU allocations.

Well, that is all for this month. Until next time, the very best of listening and 73

ar

Help stamp out stolen equipment – always include the serial number of your equipment in your Hamad

POUNDING BRASS

GILBERT GRIFFITH VK3CQ – 7 CHURCH ST BRIGHT 3741

If you think Morse Code is just something nasty that has been imposed upon amateurs by some mysterious "them" in order to make the acquisition of a callsign more difficult, you are probably missing out on more than half the fun that can be gained from our hobby. Morse may be commercially obsolete at present, but simple economics will ensure that the code remains a useful means of communication. This aside from the fact that the code is probably still the most reliable form of long-distance communication, makes the knowledge of the code and its use so important for amateurs. It is common knowledge amongst Morsiacs that it takes more skill to operate CW than SSB (for example). This means, unfortunately, that it is more difficult to get started than yakking into a microphone, or typing into a computer. Still, "mastering the art is 10 times easier than learning to talk, and you did that when you were two years old" *(ARRL Handbook)*.

Let's assume you have been taking notice of the past two month's articles and have had time to practise, and now it can be said you know the code. As everyone who has ever sat an exam will know, this is not really enough "knowledge" to make passing the examinations easy. So, what needs to be done before you are sure you can pass?

Remember, the exam is nothing like what is experienced 'on-air", but is still run as if one were applying for a position as a PMG telegraphist. This means that being able to copy other amateurs' conversations is not necessarily good enough. In my opinion, unless you are going for the new United kingdom Novice test (which uses typical QSO lingo), you need to be able to copy plain English language, without interference or noise, at 12wpm with no errors, if you want to pass 10wpm with ease. You don't need a lot of experience of operating on-air. Some people with very bad nerves will need a bit more leeway, but 15wpm should be the maximum you let yourself become accustomed to, or you will find the test is too slow and you may make simple mistakes about the ends of words. I am sure the best way to achieve this is by using a computer, followed by cassette tapes, and finally WIA Slow Morse broadcasts. All that is really required is motivation and practice. If you have a problem with motivating yourself, consider the efforts of those who have gone before; people with no interest in amateur radio have, in wartime, learned the code in days, thanks to another motivating force, and I'm sure this would apply to many people reading this column.

Possibly this is why many people are becoming attracted to QRP (low power) and home-brewing, because once we know what is possible with (say) one watt CWDX, it is a strong motivation or challenge to achieve the goal oneself, and there are many who enjoy building a rig from the meanest junk box available, and who can hope to realise a goal of 100 countries using that rig. I know that, prior to my becoming involved in amateur radio, I would have thought such a feat impossible, but now I know I could do it too, if I put in the required effort. This means you could too!

I wonder if it could be done without using Morse code?

I wonder what the absolute minimum cost would be?

I wonder in how short a time could one do it?

Following receipt of a suggestion by the U-QRP Club (USSR), the G-QRP Club has received unanimous support from major QRP clubs around the world for adoption of the new operating signal, "72", meaning "wishing you good QRP", to be used in contacts between low power stations. (MM #21).

72 Gil VK3CQ
ar

REPEATER LINK

WILL MCGHIE VK6UU @ VK6BBS – 21 WATERLOO CRS, LESMURDIE 6076

Linking Interface

There may be a few repeater clubs out there contemplating how to link their repeater to another repeater. Perhaps there have already been discussions on how to link your repeater to another. A few of you may have discovered it is not as easy as was perhaps first thought.

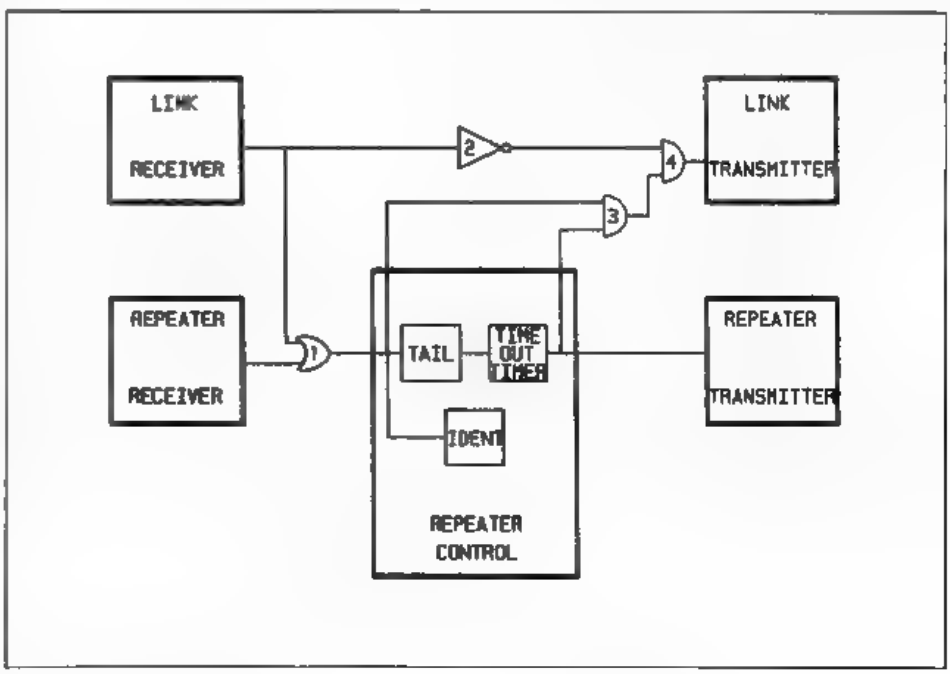
This month's Repeater Link contains a simple block diagram of the basic logic that may be of interest to you. It is all hardware based, as I have no experience on microcontrol of repeaters.

What I set out to do was take an existing repeater and find the simplest way to interface it with a simplex link. All repeaters that are hardware based have a similarity about them. There is a receiver connected to a control board that connects to a transmitter. These are the lower three boxes in the diagram: repeater receiver, repeater control and repeater transmitter. What is shown in this diagram is the switching logic only — no audio paths are shown.

The mute control located in the repeater receiver activates the control board logic; that sets in operation the carrier tail and the time-out timers. The output of the control board then turns the repeater transmitter on and off.

The logic symbols as shown 1 to 4 have all been added with the main intention of minimising the amount of change to the existing repeater. The way the repeater now operates is as follows:

All logic levels are such that high is operate and low is non-operate. For example, when the mute is open (signal received) the output



from the mute is high.

OR Gate 1 commons the link and repeater mute outputs so that either receiver activates the control board. There is no interaction between the mutes, the OR gate takes care of that. The output of the OR gate feeds the tail and time-out timers. As can be seen, the repeater control board does double duty now as the time-out (and, by the way, the CW ident as well) timer is used for the repeater and the link. The logic feed to the link transmitter is via gates 3 and 4. AND gate 3 requires the mute of either receiver to be open and the time-out timer not to have timed out. This is the normal operation when an incoming signal is received. Note that one of the inputs to AND gate 3 is before the tail-timer. This means there will be no carrier tail on the link transmitter, a desirable situation for smother operation (you do not hear two mute tails in series when linked).

AND gate 4 prevents the link transmitter transmitting when the link receiver mute opens. This would happen because the control board does not know which mute is open, and a logic signal is sent to the link transmitter to turn on. This in turn turns the link receiver off, and the whole link system toggles back and forth.

Inverter 2 (to maintain our high logic on) and the AND gate 2 prevent the link toggling back and forth. The link mute must be low (no incoming link signal) to feed a high via inverter 2 to AND gate 4 for the link transmitter to turn on.

This logic diagram is the concept only, and would have to be adapted to suit your repeater. However, this design has been built and is running under test at the moment. What it does show is that minimal changes to the existing repeater are required. The repeater's control board does all the timing. The final design also uses the repeater ident control to place identification on the link transmitter as well.

A future article in Repeater Link will present the audio side of things. This also uses the audio processing in the repeater to minimise the extra circuitry in the link transceiver.

A total of seven connections between the repeater and the link are used in the final design. Features like CTCSS encode on the repeater are fed to the link. No extra CTCSS encoder is needed. The DTMF decoder in the repeater is also shared by the link system, so that DTMF control over the linked system can be achieved via the link or the repeater.

The overall design is too complex to present in all its detail, but a few of the design concepts may help. You may be able to improve and adapt these ideas.

If you have any ideas on linking logic that you would like to share, send them to me. ar

INTRUDER WATCH

GORDON LOVEDAY VK4KAL – AVIEMORE, RUBYVALE 4702

Date	Time Z	Freq	ID	Mode	Traffic & Comments
221091	1105+	7002.5	V	A1A	Beacon (16)
dly	0650+	7006.5	MNR	F1B	Moscow Nav R/250Hz 3rd cypher (21)
121191	1015	7009	—	2xF1B	Not F7B, also 7012, 250Hz shift
221091	mni	7011.5	—	F1B	250Hz shift (4)
0211Dly	mni	7048/9	UHF8	F7B	Also F1CW, 5 fig blocks (16)
Dly	mni	7065	—	Mxd	A2, F1B, F1CW, R7B, mcw in 5 fig blocks
131191	0956+	14010	—	J3E/U	B/C Male voices, Indonesian
do	1013	14007	—	J3E/U	Same as above (3)
261191	0945	14035	—	J3E/U	B/C stn M&F Indonesian language (3)
111191	0812	14037	—	A3E	B/C with male voices
Dly	mni	14048+	—	Mxd	Rad teleph + NON & F1B
This frequency varies from 14044.2 to 14046.84					
Dly	mni	14058	—	AC3	Also heard on 14033/4 (37)
291191	1036	14058	—	NON	Timing pulse — 84 per min (10)
151191	0946	14067.3	—	AC3	Fax & carrier pulse/backwave
081191	0935	14068	VBT	A1A	Wrk VPO, 5ltr code
Dly	mni	14070	VRQ	A1A	+ VPO, VBX, Viet text (17)
Dly	mni	14075	VRQ	A1A	Also on 14095, 14100 & 14203 (50)
Dly	mni	14085	VPC	A1A	+RGT77, NBC, all Viet news agency (27)
061191	1130+	14123.8	RBPP	A1A	Clg RES3, UOJ5I, RCJC
061191	0940	14126	—	F1B	1000hz shift (17)
301091	0525	14140	ULY4	A1A	Fxd naval stn Alexandrovsk (7)
031191	0920+	14177	UID80	F1A	UZZ44 de UID80 ZBR K (7)
Dly	1000+	14210+	P7A	A1A	VRQ clone 14215, 14225 also (28)
041191	1100	14214	VWH	F1B	500Hz shift (4)
221091	mni	14217.5	UMS	F1B	Also 14211 5 250Hz (49)
Dly	0932+	14250	—	NON	Steady carrier only (10)
151191	1205	18075	—	A3E	Commercial B/C stn, no other info
0211+	1130+	18080	Rad Moscow	A3E	B/C stn ID at 1300Hz (8)
041191	1033	18118	BQG	A1A	CQ de BQG, repeat many times
Dly	mni	21031.5	MNR/ums	Mxd	Tfc to UMS 250Hz (31)
281091	0640	21031.5	UMS	F1B	Urgent typhoon active near Manilla
01 1191	1320/50	21060	UMS	J3E	Com Hotel net/3 stns/tnf supply list
Not clear where this transmx originated, not stated if hrd, maybe once only, check.					
241191	0446	21242	—	F3	TV B/C V wide signal
291091+	0400+	21250	—	R7B	4kHz wide
Dly	mni	21283.5	UMS (MNR)	Mxd	Tfc to UUMS, typhoon warning. F1B (33)
Dly	0500/10	21322	P7A	A1A	VRQ clone, mnay P stns active (27)
mni	mni	21347.5	UMS (MNR)	Mxd	F1B 250Hz/AC3 120rpm Wx/HSR Nav (8)
281091	0920+	21355.5	MNR	F1B	Popular frequency for this stn for yrs (6)

Many "hit and run" stations on 21342.5, 21344.5, 21348.5 (all USSR with .5 ID) mixed modes used. Also a "numbers" station again heard on 21350 on 231091 at 1135Z A3E. Female, flawless English, each number group repeated twice; uses this frequency often.

My thanks this month to VKs 2PS, 4BG, 4AKX, 4BHJ, 4BTW, 4BXC, 4CAS, 4EKA, 5TL, 6RO and VK6XW.

Many nuisance stations are being noted on 28-29MHz, but insufficient info is being given. Mostly PON stations, commercial broadcasters, but no information to make a positive ID. Keep with them. ■■

KNUTSHELL KNOWLEDGE

GRAHAM THORNTON VK3IY

A brief overview of what other magazines have to say. The information given below has been supplied to the WIA free of charge by Thornton Publishing. Your divisional library may have copies of the references quoted.

Amplifiers

Linear RF

A Simple 10-Meter Sideband Amplifier. Bruce Auld NZ5G, *73* issue #374 Nov 1991 pp 52, 54, 56. il ccts, cmp, diags and pcb. A circuit is given which provides 10W PEP output for 1.25W drive. The power device is a single 2SC1969 transistor.

Power

RF Power Amplifiers and the Conjugate Match. Warren Bruene W5OLY, *QST* vol LXXV No 11 Nov 1991 pp 31 -32. il ccts and graphs. A report on a quite elaborate experiment is given. Tests on three correctly adjusted output stages shows that the resistance looking back into the transmitter is not equal to the load resistance seen by the transmission line.

Antennas

Mechanical

Strengthening the Cushcraft 40-2CD. Dave Leeson W6QHS, QST vol LXXV No 11 Nov 1991 pp 38 - 42. il diags and photo. The resistance to wind and ice load is increased by insertion of tubing inside the elements to improve the section modulus. Strengthening modifications to the boom are also described.

Miscellaneous

'My Feedline Tunes My Antenna!' Byron Goodman W1DX, *QST* vol LXXV No 11 Nov 1991 pp 33 - 35. il diags. An elementary dissertation is given on the true meaning of characteristic impedance of a transmission line and its SWR. Tuned transmission lines are distinguished from non-resonant lines used with resonant antennas.

Multiband

The Heli-Hat Antenna. J Frank Brumbaugh KB4ZGC, *73* issue #374 Nov 1991 pp 32, 35. A 15 turn helix, 18" high, is capped by a circular disk 18" in diameter. A series variable capacitor combines with an adjustable tap on the helix to form an L network tuner. The antenna described is usable from 10 to 17m. A single quarter wave radial is required for each band.

Challenger DX-VI. Peter Hart G3SJX, *RadCom* vol 67 No 12 Dec 1991 pp 51 - 53. il diags and photos. An evaluation is given of this GAP Antenna Products' multiband vertical antenna; performance is compared to a Butternut HF6V-X vertical antenna.

The Solarcon A-99 Antenna. Bill Clarke WA4BLC, *73* issue #374 Nov 1991 p 36. il diag. A review is given of this commercial vertical antenna, which works on 10 to 17m.

Audio

Voice ID on a Chip. Bill Brown WB8ELK, *73* issue #374 Nov 1991 pp 11-12, 61. il cct, cmp and pcb. A device is presented which allows two voice messages to be recorded and replayed at will. 8 seconds are provided for each message. The circuit is based on ISD1016 analogue storage IC. The electrically erasable storage is non-volatile.

Computers

Accessories

Computer Interface. Greg Smith, *EA* vol 53 No 11 Nov 1991 p 72. il cct. An I/O data device which uses the computer parallel port to communicate.

Miscellaneous

Computer Remote Control of an Amateur Station. Larry Amodeo W2AX and Jack L Schultz W2GGE, *QST* vol LXXV No 11 Nov 1991 pp 25 - 30. il ccts and photos. Block diagrams are given to describe the remote operation of an amateur station in Vermont from New York via the telephone network. A Kenwood TS-940S, a linear amplifier and an antenna rotator are all remotely controlled, with indicating information displayed at the controlling end. A PC is required at each end, together with ancillary equipment such as modems.

Using Your PC to Control Radio Gear (2). Tom Moffat VK7TM, *EA* vol 53 No 12 Dec 1991 pp 94 - 99, 109. il cct and photos. A hardware interface unit is supplied to connect Icom transceivers to any computer with an RS232 port. Software listings are given in 'C' to permit control and readout of frequency.

An appropriate software disk (Aust$25) and a kit for the interface (Aust$35) is available from High-Tech Tasmania, 39 Pillinger Drive, Ferntree Tasmania 7054 Australia.

Software

Textloader for Technical Software Morse Tutor. James Hossack GM3DKW, *RadCom* vol 67 No 12 1991 p 54. A program, written in Basic, is provided to enable any text to be added to this commercial tutor.

Electronic Devices

Automotive

Car Vandalism Detector. Bob Parker, *EA* vol 53 No 12 Dec 1991 p 83. il cct. A sharply filtered microphone amplifier is used as a detector of fast rise-time high frequency sounds, typical of those produced by coins scraping on paintwork, and other acts of vandalism.

Digital Tacho. Jeff Monegal, *EA* vol 53 No 12 Dec 1991 pp 72 -77. il ccts, cmps and photos. The distributor points are used as the source of RPM information. The signal frequency is multiplied to give a satisfactory gating period; provision is made to cater for four, six and eight cylinder engines. A digital read-out displays from 0 to 9990 RPM. A kit is offered for construction of the device.

Turbo Timer. N C Albrechtesen, EA vol 53 No 12 Dec 1991 p 82. A 555 timer is arranged to maintain a diesel engine at idling speed for a preset time after the ignition switch is opened. This allows the engine to cool.

Temperature Control

Temperature Controller. R W Phelps, *EA* vol 53 No 12 Dec 1991 p 83. il cct. A small mass whose temperature is to be controlled is thermally connected to a 2N3055 transistor. The base emitter voltage of this transistor is used as the temperature sensing element, and is compared to a preset voltage. An error signal switches collector current on or off in the sensing transistor, heating or cooling the controlled mass. It is claimed that 50°C can be maintained to within ± 0.2°C by this method.

Timers

Experimenting with Electronics. Delay Switch. Peter Murtagh, *EA* vol 53 No 12 Dec 1991 pp 69 -70, 101. il cct, cmps, pcb and photos. A simple two transistor circuit actuates a relay for a preset time period, initiated by pressing a push-on switch. Delay is adjustable from 4 to 200 seconds with circuit provided, but can be extended four fold by component substitution.

Propagation

Propagation Broadcasts and Forecasts Demystified. Russ Healy NJ2L, *QST* vol LXXV No 11 Nov 1991 pp 20 - 24. il graph. An account is given of the meaning and significance of propagation data broadcast by WWV and WWVH. The relevance of solar flux, sunspot number, K index, and A index to amateur band propagation is discussed.

Power Supplies

Nicad Charger. Bernie.... ZS1BW, *RadZS* vol 45 No 10 October 1991 p 10. il cct and graph. Charging from a relatively high voltage via a series resistor gives a substantially constant charging current. A nomograph is supplied to calculate the value of resistance for a given charging voltage for each cell voltage. The information is extracted from Elektor July/Aug 1978.

Secrets of Simple DC-DC Converters - 2. Andrew Pierson, *EA* vol 53 No 12 Dec 1991 pp 134 - 137 il ccts and graphs. In this part, design procedure is given for blocking oscillators, with emphasis on efficiency and regulation. The construction of suitable transformers is also considered.

Receivers

SSB Receiver for the 80m Amateur Band (2). Leon Williams VK2DOB, *EA* vol 53 No 12 Dec 1991 pp 84 - 88. il cmp, diags, pcb and photos. The construction details are given in this part, together with the testing and alignment procedure. Directions are given for making a case from sheet aluminium.

Technology

Basic Steps Toward Tracing and Eliminating Power-Line Interference. Max Trescott K3QM, *QST* vol LXXV No 11 Nov 1991 pp 43 - 46. il ccts and graphs A general discussion is given on the causes and consequences of corona discharge and spark gap noise in power lines. Techniques are described for identifying noise sources within the home, and along power lines.

Test Equipment

Sweep Oscillator. Peter Buckman, *EA* vol 53 No 12 Dec 1991 p 82. il cct. An audio sweep generator is described. Used with a CRO, it displays frequency response directly. A CRO triggering output is provided.

Using an Oscilloscope as a General Purpose Tester. Mike Dawson G3TCL, *RadCom* vol 67 No 11 Nov 1991 p 52. il cct, cmp and diags. A simple attachment for an oscilloscope is described. A 6V 50 Hz signal is applied to the device under test. A signal proportional to the applied voltage is fed to the X amplifier, and a voltage proportional to load current to the Y amplifier. A variety of Lissajous type patterns is obtained, depending on the circuitry between the test probes. Semiconductor junctions give characteristic figures, depending on their nature. Capacitors, inductors and resistors can be distinguished, and an estimate made of their value.

Model 3500 Frequency Counter. (Product Review) Larry R Antonuk WB9RRT, *73* Issue #373 Nov 1991 pp 30 - 31. il photo. A review is given of this counter which is made by Startek International Inc. The frequency range is 10Hz to 3.5GHz.

Portable Frequency Counters. Gordon West WB6NOA, *73* issue #374 Nov 1991 pp 15 - 16. A review is given of the applications of small hand-held frequency counters. A list of manufacturers is supplied.

First Steps in Home Construction (8). John Case GW4HWR, *RadCom* vol 67 No 12 Dec 1991 pp 32 - 34. il ccts, cmp, diags and photo. A timer is described which is used in parallel with a PTT switch for mobile operation. The timer sounds after two minutes of transmission time, as a precaution against 'timing out' a repeater.

Transceivers

Yaesu FT-990 160 - 10 Meter Transceiver. (Product Review) James W ('Rus') Healy NJ2L, *QST* vol LXXV No 11 Nov 1991 pp 47 -50. il graphs and photo. A review is given of this equipment comparing laboratory measurements to specifications. A contrast is made with some of the features of the FT-1000.

Transmitters

CW Transmitter for the 3.5MHz Novice Band. Steve Price G4BWE, *RadCom* vol 67 No 12 Dec 1991 pp 46 - 48. il ccts and photo. A 1W CW transmitter is described, with a choice of up to four switch-selectable crystals. A sidetone generator is included in the design.

Glossary of Abbreviations

il The article contains illustrations, a list of which follows.

cct	A circuit diagram
cmp	A component layout drawing
EA	*Electronics Australia*
diag	A mechanical drawing
pcb	A master drawing from which printed circuits may be produced
QSTVE	*QST Canada*
RadCom	*Radio Communication*
RadZS	*Radio ZS*
73	*73 Amateur Radio Today*

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DIVISIONAL NOTES

VK2 NOTES

TIM MILLS VK2ZTM

May I, on behalf of the council and office bearers of the VK2 Division, wish all members a happy new year.

A new year brings a rash of Divisional activity leading up to the AGM which will be held on Saturday 2 May 1992. The closing date for Council nominations and agenda items will be 2pm on Wednesday 18 March 1992 at the registered office. The new Divisional year commenced on 1 January.

Nineteen-ninety-two is a special year for New South Wales, being both the 150th anniversary of Sydney being elevated to the status of a city, and Local Government being established. To mark the year-long celebrations, a special callsign has been made available — VI150SYD. It will be available for use by clubs, groups or individuals upon application to the Divisional office by writing to: Special Callsign, PO Box 1066, Parramatta NSW 2124. QSL reports should also be sent to this address. Include a self-addressed stamped envelope for a direct reply. The VK2WI broadcast will keep you informed.

A couple of years ago, changes were made to the Divisional Conference of Clubs meetings, replacing them with regional meetings. Matters and agenda items processed by these meetings were submitted to a State conference held at Parramatta on 7 December 1991. The minutes will find their way back to the clubs in the regions. During the early part of this year, regional meetings will need to be held with new matters being raised. The next State regional delegates' meeting with Divisional Council is scheduled for 3 May.

The Central Coast ARC Field Day will be held at the Gosford Showground on Sunday 23 February. The Gladesville ARC is hopeful of four test transmissions this year. The tentative date for the first is 26 February. The first Trash and Treasure will be at Parramatta, Sunday afternoon 2 February. The balance of these events for 1992 will be held on the last Sunday of the odd-numbered months. February is likely to be the next time the rejuvenated Sydney fox hunts are conducted. While it may be a while since fox hunts were held in Sydney, they have been regular features in the country, like the Urunga Convention over the Easter weekend, the Oxley Region in June or at intervals at Orange.

New Members

A warm welcome is extended to the following who joined the Division towards the end of last year.

M R	Cheesman	Assoc	Kensington
A J	Clancy	VK2GPN	Spit Junction
S	Cobcroft	Assoc	Bangalow
P N	Duff	VK2JQE	Toukley
A J	Farrow	VK2TJF	Castle Hill
M	Frazer	VK2XWS	Manly Vale
R H	Gandevia	VK2VN	Randwick
P E	Garbutt	VK2GAI	Lapstone
F	Leaver	VK2SJ	Yenda
A	Montanari	VK2GMM	Maroubra
R W	Parks	VK2GRP	Kariuh
L	Pollack	VK2NM	Lyndhurst
A	Roberts	VK2GPO	Ultimo
D M	Symons	Assoc	Tumut
N W	Turner	Assoc	Narooma
L T	White	VK2GNJ	Narromine

February is also the starting date for the next classes being held at Parramatta on Monday nights. Contact the office at Parramatta via the methods shown in the page *AR* directory.

Divisional Exams

The NSW Division has scheduled four exams for this year. The first will be held at Parramatta on Sunday afternoon 1 March. The closing date for applications is 13 February. All enquiries to the VK2 office by one of the methods shown in the directory of page 3 of *AR*. The other dates for 1992 are set down for 24 May, 30 August and 8 November.

Diary

The office needs an update on club and group details at regular intervals. Keep us informed on meetings, classes, exams and field events, as well as office bearers, so your

club can be assisted whenever enquiries are received.

QSL Bureau

A reminder that you must register with the Bureau your requirements re handling of any cards for your callsign/s received at the Bureau. The data bank was completely re-programmed last year, with most amateurs providing input. A few appear to have missed providing these details, judging by the comments that "I have not been getting any cards from the Bureau" on-air or to the office Even if you don't want to collect cards, please advise, so the storage does not get jammed again. Check with your local club if it receives a bulk clearance of cards from the Bureau. Otherwise you should contact the Divisional office to register. No enquiries to the Bureau, other than sending in cards for **outward** despatch.

VK3 NOTES

JIM LINTON VK3PC

Threats to Repeater Network

The Victorian Government's push for microeconomic reform, its policy of full cost recovery, and privatisation of infrastructure are all threats to the repeater network.

The WIA Victoria Council has been monitoring developments in government policy for the past 18 months to see if they will have an effect on the hobby of amateur radio.

Since voice repeaters were first permitted in Victoria they have been placed on select mountain tops to provide a very good coverage. This was achieved only due to WIA Victoria being recognised by government bodies and agencies as a responsible and worthwhile organisation. We have also received excellent inside help from a few of our members employed by particular government bodies and agencies. WIA Victoria has developed a high degree of mutual understanding and co-operation with a number of the government bodies They have been willing hosts to WIA Victoria repeaters on their communication sites — and on some installations they shared the use of our equipment. But the long-established arrangements which have made this possible are now in doubt.

Some Repeaters May Have to Close

Two policies initiated recently by the financially strapped Victorian Government are of grave concern. The first is its direction to government agencies, like the Department of Conservation and Environment, for them to raise revenue. This could mean WIA Victoria being asked to pay thousands of dollars rent a year for mountain-top sites.

Already a bill of $1500 has been received — and the WIA Victoria Council will do its best to seek a review of the decision to charge us such a high rent. We simply cannot afford such amounts which, if applied to various repeater sites, could send us broke.

The WIA Victoria Council is carefully considering its options and may have to abandon some of the lesser used repeater sites. This is a reluctant step obviously — but may have to be taken during this year.

Privatisation Threat to Repeaters

We thought the cost recovery policy imposed by the Victorian Government was the worst possible threat to the repeater network. But even worse is the real prospect of the Victorian Government selling all of the communications networks operated by government bodies and agencies.

The Ministry for Finance has targeted for privatisation the more than 30 separate radiocommunication networks. These include those run by emergency services, public transport, Education Department, Sheriff's Office, VicRoads, power, gas and water utilities, Department of Conservation and Environment — to name a few. The privatisation of these networks seems certain to affect the WIA Victoria repeater network which shares sites with them.

The government called for expressions of interests in November from private companies to take over all of its radio networks. The government is looking for the private sector to buy up all of the equipment including 15,000 mobile radios, remote sites and towers. It has received about 20 expressions of interest. The government intends to call tenders soon and hopes to have the privatisation of the networks in place by the middle of the year. Privatisation is certain to see extensive rationalisation of the current 30 networks over a number of years into a single integrated network using the digital technology.

The Finance Ministry is still evaluating the huge savings it expects to make by turning over the on-going operation of the networks to a single private communications company. The Ministry is also considering the loss of jobs in the public service sector and the industrial relations implications of its plan.

The WIA Victoria Council is very concerned about the future of amateur repeater installations on those government sites once they are privatised.

5/8 wave

JENNIFER WARRINGTON VK5ANW

Isn't it always the way? You do the work and somebody else gets the credit! Well, perhaps it wasn't credit, but if you have any complaints about last month's column, direct them to me; *Rowland* was not to blame despite the fact that *his name* appeared instead of *mine!* (Apologies Jenny — Ed).

It isn't very pleasant to announce that someone has become a Silent Key, but it is even worse to discover that the person you have been talking about is actually alive and well. I will only say that I thought I had heard the news from a very reliable source and, of course, having been away for a couple of months, assumed it must have happened while I was away. Anyway, I am pleased to tell you that Gordon Goldsmith VK5HM (Hotel Motel as he has always been known) is **not** a Silent Key, although he has been quite ill for a couple of months. Gordon is currently residing at the Sunny Dale Rest Home, 247 Military Rd, Semaphore. If you would like to visit Gordon, it is suggested that you first ring the home on 49 4744. I am sure he would like to hear from some of his old friends.

WIA Exams

The next WIA Exam will be held on Saturday 29 February 1992. The closing date for application will be Sunday 14 February. For more information ring the Examinations Officer, Don McDonald VK5ADD, on 276 1251.

RTTY Gateway

I understand VK5RSV is now a RTTY Gateway carrying both RTTY and packet. This meant that RTTY users can now get on to packet (clever people down there at South Coast ARC). If you would like more information contact Grant VK5ZWI or Andrew VK5EX.

It's that time again! What time? Why, the time when Council looks for nominees for the 1992 Council Election. If you feel you have something to contribute to the running of the organisation, **please** let a member of Council know **now.**

Diary Dates

Tuesday 23 February, General Meeting, 7.45pm, Burley Griffin Building, 34 West Thebarton Rd, Thebarton.

VK6 NOTES

HARRY ATKINSON VK6WZ

Dateline – Esperance WA

Preparing these notes has been a hassle this month — strange location, strange typewriter, and all office files and telephone hundreds of kilometres distant. It also differs from those heady days of the '50s and '60s when divisional notes sometimes ran to a whole page, and sometimes included the odd "feud" across state borders. In my case, I handled friendly insults with VK5PS (the late Warwick Parsons) across the VK5/VK6 border. It was never my good fortune to meet "Pansy" but we corresponded occasionally and swapped cards at Christmas time. If he were with us now he'd no doubt tell us all that BBS meant "best broadcasting station", which was

his description of his place of employment — a certain South Australian commercial station.

It was announced in December that WICEN's application to the state government for a grant of $3000 for equipment had been turned down.

Next month's notes will list the award winners in VK6 for 1991 **73 to all VK6WZ**

VK7 NOTES

TED BEARD VK7EB

All members please note: The Annual General Meeting of the VK7 Division shall be held at the registered office of the Institute, 105 New Town Road on 28 March 1992, commencing at 2pm.

All Notices of Motion for the AGM must be received by the Secretary not less than 28 days prior to the meeting, and must be signed by at least three (3) members.

Nomination of Candidates for election to Council must be received by the Secretary, in writing, not less than 21 days before the AGM.

Not less than 10 days before the AGM, should an election be necessary, a ballot paper shall be posted to each member of the division, and is to be returned to the Secretary prior to the commencement of the AGM.

Proxies are to be deposited at the registered office of the Institute, 105 New Town Road, Hobart, at least 24 hours before the time appointed for the meeting.

All the above items are in accordance with the Articles of Association.

E A BEARD VK7EB
VK7 DIVISIONAL SECRETARY

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Murphy's Corner

Corrections — Simple Regenerative VLF-LF Receiver — *Amateur Radio* January 1992 Circuit diagram page 8

Please note that the inputs 5(+) and 6(-) to voltage follower stage N1B are shown incorrectly connected and should be transposed.

Survival Radio, *AR* Dec '91. Please note that the decoupling resistor for ZN414, shown as 220k, should have been 220 ohms.

The parts list for Drew Diamond's three-band multiplier CW transmitter in December 1991, page 13, has errors in the resistor values. All resistors between, but not including, R2 (1kohm) and R8 (100k pot) have been incorrectly listed as ohms, but should be kilohms (kohm). Values, ranging from 1.5k to 220k, are shown correctly on the circuit diagram. Also Q_1 is listed as a 2N222, but should be 2N2222.

CLUB CORNER

The Gosford Field Day is a long-running and popular annual event on the amateur radio calendar. The next field day will be held at the Gosford Showground on Sunday 23 February 1992, commencing at 8am. This will be the 35th year of the event.

As usual, the well known suppliers of electronic equipment, components and books will be attending the event. These companies will have their latest products on display and for sale, and many of these companies will have items at special field-day prices.

The organiser, the Central Coast Amateur Radio Club, has kept the format of the day in line with the changing face of amateur radio. In recent years, seminars on a wide range of topical and interesting lectures and equipment displays have been arranged. Some attractions, however, have remained unchanged and ever-popular; among these is the sale of the many thousands of new and used surplus equipment items known as *disposals*, with many bargains going up for grabs.

Last year, a popular flea market was arranged for those who wanted to sell their surplus equipment, from trestles, the trailers, or from the boots of their cars. The organisers expect the flea market will boom this coming field day, with even more vendors than last year.

Other Gosford Field Day attractions include:

ALARA stand
WIA Historian stand
QSL Bureau
WIA Educational Service stand
WICEN display
Amateur television displays
Packet radio displays
Ladies' stall
Complimentary bus tour of the central coast
Free tickets to the nearby reptile park
Free shuttle bus from Gosford railway station.

More than 1400 people have attended each of the past few Gosford field days; this one will be bigger than ever, so don't miss it. Mark 23 February 1992 down for the Gosford field day, and start gathering those items you want to sell at disposals or the flea market.

1992 Gosford Field Day Preview

Amateur radio operators, their families, friends and those interested in amateur radio are invited to attend the 1992 Gosford Field Day which will be held on Sunday 23 February 1992 at the Gosford Showground. Gates open at 8am in wet or fine weather. All displays are under cover.

Registration: Adults — $6.00. Pensioners — $3.00. Children (under 12) — free

A special group concession will also be available on application.

Proposed Program Sunday 23 February 1992

0800 to 1300	Registration
0800 to 1700	Tea and coffee available in dining room
0800	Flea market open
0930	Disposals booking-in closes (Dwyer Pavilion)
1000	Disposals open (entry southern end of Dwyer Pavilion)
1200	Bus tour departs
1200	Various seminars commence
1330	Drawing of raffle. Check at "information" for winners.

A field day information service will be provided on the Gosford 2m repeater (6725) on Saturday afternoon and Sunday morning using the callsign VK2AFY/P.

Trains: Sydney and Newcastle trains will be met by a courtesy bus which will run between Gosford railway station and the Showground between 8am and 10.30am. Return transport may be arranged at the information booth.

Parking: Plenty of off-street parking is available at the Showground.

Accommodation: Accommodation is usually scarce on the central coast at field day time, and early booking is advised.

Catering: Tea, coffee and biscuits available free of charge in the dining room from 8am to 3pm. Take-away food can also be purchased in the Showground.

Calls Present: Bring your QSL cards for the "calls present" boards.

Disposals: Disposals forms and lot numbers may be obtained at the Showground on Saturday afternoon 22 February 1992. Items for disposals may be booked in on Saturday 22 February between 2pm and 4pm, or on Sunday 23 February before 9.30am. Please note that 9.30am is the cut-off time for disposals booking-in, and late arrivals may be refused. Improperly tagged or catalogued items will be refused.

Flea Market: For those who wish to bypass disposals and sell their own equipment, trestles will be available in the flea market.

Information on group concessions, trade displays, flea markets, disposals, programs or any other field day information can be obtained by writing to:

The Field Day Committee
Central Coast Amateur Radio Club Inc
PO Box 252,
GOSFORD NSW 2250
Bob Fitzgerald VK2XRF
Gosford Field Day Committee Secretary

ar

Stolen Equipment

Stolen from L J van de Pavert VK3CLV:
1 Kenwood TS440S HF transceiver, serial number R706039;
1 Kenwood TM201B VHF transceiver, serial number 7011611E;
1 Kenwood PS430 power supply;
1 Kenwood SP40 external speaker;
1 Kenwood SP50 external speaker

OVER TO YOU

ALL LETTERS FROM MEMBERS WILL BE CONSIDERED FOR PUBLICATION BUT MUST BE LESS THAN 300 WORDS. THE WIA ACCEPTS NO RESPONSIBILITY FOR OPINIONS EXPRESSED BY CORRESPONDENTS.

Amateurs in History

Historians at the Geelong and Warrnambool campuses of Deakin University are putting together a biographical dictionary of the Western District of Victoria as a major new historical project. This dictionary of Geelong and Western District people from all walks of life will be the basis of a substantial history of the region and a valuable resource for future historians.

Amateur radio operators have played a significant part in not only communications and emergency services, but also in the whole range of social and cultural activities since Marconi et al let us, a wide social spectrum, loose on the unsuspecting radio spectrum. We want to invite amateurs with links to Geelong and the Western District of Victoria to take part in the project by nominating "silent keys", amateur or not, you feel have contributed to the region in any significant way.

There are always some people who stand out in memory. This is as true of amateurs as of any group of people. But we don't want to miss the unsung people who have contributed to the making of the community. As amateurs distributed through the community we are particularly well placed to make our contribution to the community's memory bank. I suppose it is a pity we have to have a silent-key-only limit, but our turn will come.

We will be pleased to give more information on the project and send nomination forms to any amateurs who would like to communicate with either:

Ros Lewis (052) 47 1592 or
Ann Chandler (052) 47 1695
Centre for Australian Studies
Faculty of Humanities
Deakin University
Geelong 3217
Ros Lewis VK3NJU/YMR

Monopole or Unipole?

The old saying that "a rose by any other names smells the same" certainly applies to my "unipole" antenna described in October *AR*. Peter VK4KIP took me to task in December '91 *AR* re the naming of this antenna — he claims it should have been a "monopole"!!

After I read Peter's comments, my initial reaction was "so, what's the big deal?" — would Peter with his academic purism rename the popular "Slim Jim" antenna a "Thin James"? At this stage, I decided to consult my trusty Oxford dictionary. Here I found that a two-wheel cycle is known as a "bicycle", and a one-wheel machine can be a "monocycle" or a "unicycle" — either name applies. I concluded, therefore, that my antenna can be known as a "monopole" or a "unipole".

So, Peter, if the term "unipole" offends your Latin/Greek derivation, I suggest you buy some "white-out" and correct the article in your edition of *AR* — I will not be offended by the change!

Des Greenham VK3CO
16 Clydesdale Crt
Mooroopna 3629

Spaced Out?

In reference to Gilbert's article under "Pounding Brass" (*AR* Jan 1992), please note that a word space is **seven** dits, not five as stated. Refer to any handbook for confirmation. With a poor "fist" and/or poor reception, five dits could be indistinguishable from a letter space of three dits.

David Horsfall VK2KFU
PO Box 257
Wahroonga 2076 ar

SILENT KEYS

DUE TO INCREASING SPACE DEMANDS OBITUARIES MUST BE NO LONGER THAN 200 WORDS.

We regret to announce the recent passing of:

Dr W J	Hart	VK2YQ
Mr Jimmy	Jones	VK2AUX
Mr F H	Browne	VK3DKO
Mr R A	Gorman	VK3YIB
Mr Kelvin	Lee	VK3ZSO
Mr Peter	Boddington	VK4BMP
Mr W A	Wallace	VK4KHZ
Mr M J	Brunger	VK5OS
Mr R K	Knott	VK5AFB
Mr Harold	Pain	VK6ABH
Mr G E	Brown	VK6BBZ

Peter Boddington VK4BMP

It is with deep regret that we record the passing of Peter on 25 October 1991, aged 61 years. He is survived by his brother David and sister Mary Ruth Cooper, both residing in the Sydney area.

Peter held a First Class Commercial Ticket and, after eight years in commercial broadcasting, accepted a position in the radiation and electronics laboratory of the Ranger Uranium Mine. Peter left in 1968 to take up the position of Base Administrator with the Royal Flying Doctor Service at Mount Isa until he retired in 1981. In the 12 years with RFDS, Peter became greatly respected by the people of the north-west Outback.

In his retirement, Peter took up a small property 25km from Mount Isa, known as the Melaleucas, where he built with his own hands a very fine homestead designed with special attention to coping with the harsh climate. The complete complex was powered by solar energy, and the power for amateur activities also came from this source.

Peter passed away on his beloved Melaleucas, with his special friend of long standing, Mary Elizabeth, at his bedside on Saturday evening 26 October 1991. He was buried there on the property in the presence of many friends.

At the Flying Doctor base in Mount Isa, a melaleuca tree has been planted as a memorial to a fine man.

Noel Lynch VK4BNL
Basil Pointon VK5BK
John Martin VK4MX

Jimmy Jones VK2AUX

With sadness, I report the sudden death of our friend Jimmy Jones VK2AUX. Jim died Tuesday 17 December 1991 at the age of 37 years.

He was a member of the Blue Mountains Amateur Radio Club Inc since 1977 and participated in many club activities and served as the club QSL manager since joining the club. Jim has been a member of the WIA for several years and attended many AGMs and assisted the QSL bureaux on behalf of the Blue Mountains club. Jim's other major activity was Scouting, which he combined with his hobby of radio. He enjoyed showing Scouts the way of amateur radio during many hours of JOTA activities.

He first obtained his novice licence VK2PBU, and when he operated the local Blue Mountains weekly 80m net he was known as VK2 Pretty Blue Undies. Jim upgraded his call to a combined licence VK2JBU, and it was only six weeks ago he passed his morse exams and realised his ambition of an unrestricted licence. Jim had reserved the callsign VK2AUX with DoTC for about a year. He had the pleasure of using his new callsign up to the day he died.

Jim will be sadly missed by his parents and many friends throughout the Blue Mountains and radio world.

Terry Ryeland VK2UX.

Charles Frederick Peddell VK2XO

Chas Peddell passed away on 3 May 1990 in his 84th year, after a period of ill health.

After service in the RAN as a Leading Telegraphist, he joined DCA as an Aeradio Operator on 1 April 1940. His first posting was to Cloncurry during the hectic war years, when accommodation was scarce and primi-

tive. Jack Faulkner VK2AZP recalls Chas and his wife living in less than ideal conditions, made habitable by Charlie's ingenuity.

Next transfer was to Kempsey. During the devastating floods of the early 1950s, Chas was highly commended by civil authorities for maintaining communications with the outside world, when all else failed. Ron O'Brien the-then Senior Technician, set up his 3BZ equipment using borrowed and acquired crystals and batteries. At Sydney, Brisbane, Coffs Harbour, Lord Howe Island and other units, he held various operating and supervisory positions. He was the last OIC of the Liverpool HF Direction Finding Station prior to its closure in 1954.

He was an outgoing, likable person who, on quiet night shifts, could hold an audience on any subject from religion to automobiles, and, of course, "ham" radio. At times he proudly displayed an injured finger gained whilst assisting Francis Chichester lift his aircraft from the water at Jervis Bay.

After retirement in 1971, he continued to enjoy his radio until failing hearing made it too difficult.

D Reynolds VK2ANW

John Rooks VK2OD

John passed away on 18 December 1990 after a lifetime devoted to the advancement of radio communications.

The year 1920 saw a 16½-year-"old" John join the RN at Plymouth, and commence training as a telegraphist using crystal receivers and spark transmitters. Whilst serving in the Mediterranean, he was chosen to serve aboard the Admiral's yacht HMS *Bryony*, and became involved in ionospheric studies in conjunction with radio pioneer, Marconi. Communication testing and monitoring became a feature of his duties as the RN re-equipped with valve-type equipment.

In 1928, John volunteered for an exchange posting with the RAN, arriving here in HMAS *Canberra* on her delivery voyage. On completion of his service he was discharged and joined the then-DCA in 1934. He commissioned the Department's first station at Holbrook, and later became involved in the acceptance, installation and maintenance of transmitters, receivers and DF equipment.

In 1950 he was engaged in the semi-automation of the Sydney Centre. After transferring to Townsville in 1956 as supervisor, he remained there until retirement on 10 July 1969, when he returned to Sydney. He was a sensitive, caring person who remained a "ham" throughout, but in recent years only monitored the bands.

The writer last saw John at the Aeradio 50th anniversary luncheon, where he enjoyed himself immensely and re-lived some of his past achievements.

D Reynolds VK2ANW

Max Brunger VK5OS

Max passed away on 6 November 1991, aged 65 years, after contracting leukemia.

Max was a good family man and member of his church community, and was a conscientious employee of Carr Fasteners for 46 years, having recently retired from his senior position in manufacturing quality control. He served in the RAAF during WW2. Max had been an amateur radio operator for 35 years and greatly enjoyed this hobby. He also enjoyed sailing Heron class yachts, often in company with his family.

VK5OS was initially active on 7MHz in the days of AM and valves, and became known as "Old Socks" because of his callsign. He built most of his own gear and earned fame for his 807 driver into a 7C5 power amp valve transmitter — which really worked well.

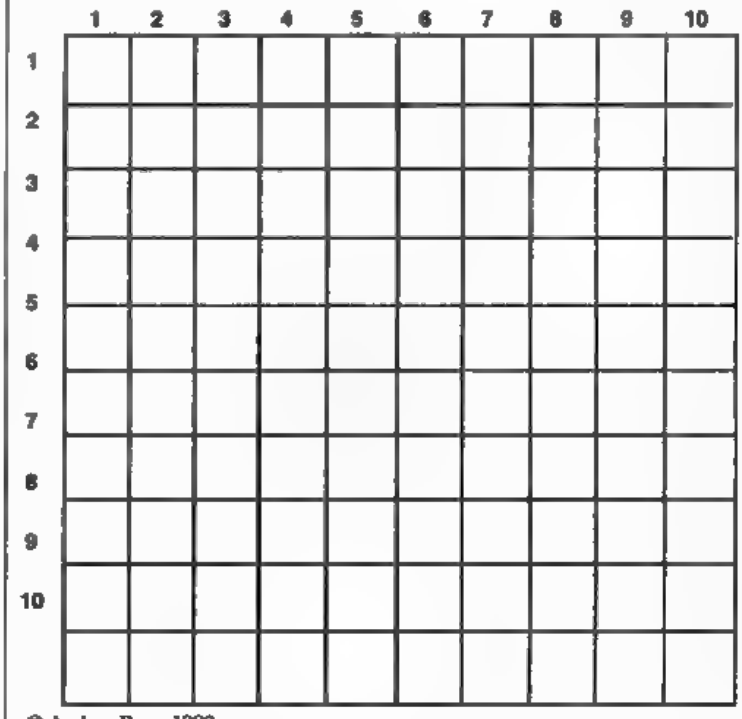
Max was organiser of the CW Operators QRP CLub and had been a foundation member (No 2) when it was formed in 1983. The cheery and helpful voice of Max controlling the CW Ops 3.5MHz SSB net on Friday evenings will long be remembered.

Max was a gentleman in the full meaning of the term and will be sadly missed. Deepest sympathy is extended to his wife Roma and family.

Don Callow VK5AIL

Morseword No 59

Solution Page 56



Across:
1 Nude
2 Expectorated
3 Scene
4 Tick over
5 Drink noisily
6 365 days
7 Sink or ____
8 Scoff
9 Whiff
10 Prolonged attack

Down:
1 Soft cheese
2 Keep back
3 Conceited
4 Diet
5 Enjoy
6 Hot lollies
7 Road
8 Sketched
9 Shell
10 Fruit

HF PREDICTIONS

ROGER HARRISON VK2ZTB, THE APOGEE GROUP

I must first offer my apologies for the non-appearance of the predictions since September last year. We moved home and business on the 1st of September, just on deadline for the October issue.

The computer system I was then using to run the Graph-DX software suffered a breakdown (probably unrelated to the move), then I spent the next eight weeks mostly away from home, travelling interstate (on business) and overseas (for the Institute); it was an incredibly busy period. Work commitments have taken up my time since, plus a substantive overhaul of our computer systems has meant volunteer "work" has necessarily taken a "back seat".

But, that's now behind me, and the predictions return. So, for those just encountering the charts for the first time, and for those who've forgotten in the mean time, read on to find out what they can do for you and how you can use them.

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column, the second column lists the predicted MUF (maximum usable frequency), the third column the signal strength in dB relative to 1 µV (dBU) at the MUF. The fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency, as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 µV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point 'standard' where S9 is 50 µV at the receiver's input and the S-meter scale is 6dB/S-point.

µV in 50 Ohms	S-points	dB(µV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4
0.78	S3	-2
0.39	S2	-8
0.2	S1	-14

The tables are generated by the Graph-DX program, assuming 100 W transmit power output, modest beam antennas (e.g. three-element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas.

VK EAST The major part of NSW and Queensland.

VK SOUTH. Southern-NSW, VK3, VK5 and VK7.

VK WEST. The south-west of West Australia.

Likewise, the overseas terminals cover substantial regions; e.g.

"Europe" covers most of western Europe and the UK.

Graph-DX is written in the C language and runs on any IBM PC

AT/XT or campatible computer with EGA, Hercules or VGA adapter and screen. Professional and Amateur versions are available.

Enquires to FT Promotions, PO Box 306, Woollahra NSW 2025.

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VK EAST - MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	13.3	-1.	10.1	0	1	-4	-15	-29
2	12.5	-10	9.6	-4	-2	-6	-16	-30
3	16.2	-4	12.6	-10	-1.	-1.	-6	14
4	23.3	3	18.0	-20	-3	2	3	0
5	30.7	5	23.2	-29	-6	2	6	6
6	32.	7	24.4	-33	-7	2	7	8
7	3.	7	24.7	-31	-6	2	7	8
8	30.3	8	24.7	-26	-3	4	8	9
9	29.0	9	24.1	-15	2	8	10	9
10	27.5	1.	22.2	-4	9	13	13	10
11	26.0	14	20.8	9	16	17	15	11
12	24.5	17	19.6	20	23	21	17	10
13	23.8	20	18.9	30	28	25	18	11
14	23.	23	18.3	37	32	27	19	10
15	22.2	24	18.0	39	33	26	18	8
16	2.	25	18.4	39	32	25	15	5
17	9.9	26	15.4	39	31	23	12	1
18	18.5	27	14.3	38	28	20	8	-4
19	17.3	28	13.3	36	26	16	4	-10
20	17.6	28	13.4	36	26	17	5	-9
21	20.3	25	15.9	37	30	23	13	2
22	18.2	22	14.1	26	21	15	5	-6
23	17.2	6	13.3	17	15	10	1	-10
24	15.9	9	12.0	8	8	3	-6	-10

VK STH - MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	13.8	3	10.6	4	3	-3	-15	-29
2	12.8	-6	9.9	-2	-1	-6	-17	-31
3	14.9	-1	12.5	-8	0	0	-5	-13
4	24.4	4	18.9	-19	-1	3	a	1
5	29.0	6	23.8	-28	-5	2	6	6
6	28.7	5	23.5	-31	-7	1	5	5
7	28.5	5	23.3	-31	-7	1	5	5
8	28.0	5	22.8	-29	-6	2	5	5
9	27.2	4	22.0	-23	-3	4	6	5
10	25.9	8	20.9	-13	3	7	8	5
11	24.1	10	19.4	-4	9	11	9	5
12	22.3	13	17.9	11	16	14	10	3
13	20.5	18	16.3	23	21	17	9	0
14	19.3	23	15.4	32	25	18	8	-4
15	18.4	24	14.5	34	25	16	5	-8
16	17.5	26	13.8	34	24	15	1	-13
17	16.9	27	13.1	34	23	13	-1	-17
18	16.1	27	12.5	33	21	10	-5	-21
19	15.4	28	11.8	31	19	7	-9	-27
20	15.0	28	11.4	31	17	5	11	-30
21	15.9	26	11.9	31	20	9	-6	-23
22	18.3	22	13.6	30	23	15	4	-8
23	19.5	18	14.7	24	21	15	6	-5
24	16.9	13	12.8	14	12	6	-3	-16

VK WEST - MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	12.3	10	9.6	9	0	-12	-30	
2	11.7	0	9.0	2	-4	-14	-31	
3	15.2	1.	11.3	0	2	-2	-12	25
4	21.9	5	17.0	-7	4	5	3	-3
5	29.3	6	21.3	-15	1	6	8	6
6	29.4	7	22.3	-20	-1	5	8	7
7	28.3	6	22.0	-22	-2	4	7	6
8	28.1	6	22.0	-21	-1	5	7	6
9	27.6	7	22.5	-19	0	6	8	6
10	26.7	8	21.7	-12	3	8	8	6
11	25.4	9	21.1	-3	8	11	10	6
12	24.0	13	19.4	10	16	15	12	6
13	22.5	17	18.1	23	22	19	13	8
14	21.0	21	16.8	33	27	21	12	7
15	20.3	23	16.1	35	28	21	10	-1
16	19.6	24	15.5	36	28	19	8	4
17	18.8	25	15.3	36	27	18	6	-7
18	17.9	26	14.0	36	25	15	2	-12
19	17.1	26	13.2	34	23	12	1	-17
20	16.9	27	13.3	32	20	8	-7	-24
21	15.2	27	11.6	31	17	5	-12	-31
22	15.7	27	11.9	32	19	7	-9	-27
23	17.5	23	13.2	32	21	11	-3	-18
24	15.2	19	11.5	21	11	1	-15	-32

VK EAST - EUROPE L.P.

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
	12.6	6	9.4	-2	0	4	14	27
2	12.6	-2	9.5	1	0	-5	15	29
3	12.6	1	9.6	4	1	-5	-17	-32
4	11.9	5	9.2	7	1	8	-22	
5	10.9	8	8.5	8	1	-13	-30	
6	11.1	15	8.7	11	0	-13	-33	
7	13.2	22	10.5	20	9	-3	-19	38
8	17.3	23	13.8	29	2	12	0	-33
9	18.8	21	14.3	25	22	17	9	0
0	18.0	4	13.6	17	14	9	4	4
11	18.8	7	14.9	0	6	6	2	5
2	17.8	0	14.1	-9	0	2	-1	7
3	16.9	6	13.6	16	-3	-1	-3	9
4	16.2	10	12.6	-9	-5	-2	-4	9
5	15.4		11.9	21	6	1	5	10
16	14.7	-18	11.2	21	7	4	6	11
7	14.3	20	10.7	21	7	4	6	11
8	15.1	-17	11.3	22	7	4	5	10
19	17.4	10	13.7	25	18	13	3	7
20	20.4	4	15.8	-27	-9	-3	2	4
2	17.7	6	13.6	20	-5	-2	-3	-8
22	15.3	8	11.7	13	3	2	-6	-13
23	13.9	9	10.5	18	1	3	9	18
24	12.5	9	9.8	8	1	4	12	23

VK STH - EUROPE L.P.

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	12.1	-8	9.2	-2	-1	-7	-17	-31
2	12.0	-4	9.2	0	-1	-8	-20	-35
3	12.0	0	9.2	3	0	-9	-22	-39
4	11.4	4	8.8	5	-2	-12	-29	--
5	10.5	7	8.2	6	-5	19	-39	-
6	10.6	13	8.4	8	-5	-20	---	--
7	12.4	20	9.8	10	3	-10	30	-. -
8	15.7	23	12.5	26	16	5	-9	-25
9	19.7	20	14.5	29	23	16	6	-5
10	17.8	19	13.2	22	18	12	3	-7
11	15.9	12	12.2	12	11	5	-3	-15
12	16.5	6	11.5	3	6	3	-3	-13
13	15.6	-2	11.0	-5	1	0	-6	-14
14	15.0	9	10.4	-12	-2	-2	-6	-14
15	14.2	15	9.9	-14	-4	-3	-7	-14
16	13.7	-19	9.6	-16	-5	-3	-7	-14
17	13.5	-21	9.5	-17	-5	-4	-7	-14
18	14.4	18	10.2	19	6	4	6	12
19	16.3	13	11.3	24	8	4	5	9
20	19.2	7	13.8	28	9	4	3	6
21	16.6	10	12.9	21	6	3	5	10
22	14.4	13	11.2	14	4	3	7	15
23	13.2	14	10.3	9	2	4	10	20
24	12.3	-13	9.4	5	2	5	14	26

VK WEST - EUROPE L.P.

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.7	-20	9.0	-8	-4	-8	6	27
2	11.7	16	9.0	6	4	9	18	31
3	11.6	-12	9.0	4	-4	-10	20	34
4	11.0	-10	8.6	-2	-5	12	-25	
5	10.2	8	8.0	0	7	17	33	
6	10.3	3	8.0		7		36	
7	11.9	6	9.4	6	2	12	29	
8	14.9	11	11.8	12	6		3	28
9	18.5	14	14.8	18	14	8	0	1
10	20.3	16	15.3	20	18	14	7	-
11	16.6	12	12.8	13	11	6	-3	-14
12	15.6	6	12.0	4	5	1	-6	-17
13	17.4	1	11.9	5	1	1	4	-11
14	16.3	6	11.1	3	3	3	6	13
15	15.5	12	10.7	18	6	-5	-8	-14
16	14.8	17	10.1	20	8	6	-8	-14
17	14.0	21	9.6	20	8	-6	-9	-15
18	13.5	24	9.3	20	8	6	9	5
19	13.3	27	9.2	21	9	7	10	7
20	14.2	-22	9.8	-22	-8	6	-8	4
21	15.9	-15	10.9	24	-9	6	-8	-13
22	13.9	20	10.8	8	7	6	9	16
23	12.7	23	9.8	15	6	7	12	24
24	11.9	23	9.2	11	5	7	14	24

APOGEE ARTS

VK EAST - AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	15.7	6	11.0	5	6	1	-7	-19
2	17.2	6	13.1	0	6	5	-1	-9
3	17.0	7	12.9	-5	2	2	-2	10
4	19.5	2	14.7	-12	0	3	1	-4
5	24.2	4	17.0	18	-1	3	3	1
6	24.9	3	17.4	-20	2	2	3	1
7	25.0	4	17.5	-20	-2	3	4	1
8	25.0	4	17.5	18	-1	4	4	2
9	25.8	3	17.4	-12	2	5	5	1
10	22.3	7	17.4	-5	5	7	5	0
11	20.6	8	16.5	0	8	8	3	-3
12	18.9	10	15.1	7	10	8	1	7
13	17.8	3	14.1	13	13	8	0	-10
14	16.9	17	13.3	19	15	8	2	15
15	16.1	22	12.6	25	17	8	-4	-19
16	15.4	25	12.0	28	18	7	-7	-24
17	14.7	27	11.3	28	16	5	-11	29
18	14.1	29	10.7	28	15	2	-15	-33
19	13.7	30	10.3	28	14	0	17	30
20	14.5	29	9.9	29	16	3	-14	-33
21	13.7	28	9.4	24	11	1	-18	30
22	13.2	29	9.1	17	7	-3	-20	-39
23	13.0	13	9.0	12	5	-5	-20	-39
24	13.8	8	9.6	8	5	2	-15	-30

VK STH - AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	16.8	12	11.5	11	10	5	-4	-16
2	17.9	11	13.5	8	11	8	1	-7
3	20.7	9	16.1	1	9	9	5	0
4	24.7	8	17.5	-5	6	9	7	3
5	25.5	6	18.2	-11	3	7	7	4
6	25.6	6	18.3	13	1	6	6	3
7	25.6	6	18.3	14	1	5	6	3
8	25.5	6	18.1	-13	1	6	6	3
9	25.2	6	17.9	10	3	7	7	3
10	24.2	8	17.1	-4	6	9	7	3
11	22.7	9	16.0	1	9	10	6	1
12	20.8	10	14.6	7	11	10	5	-2
13	19.1	12	13.4	12	13	10	2	-7
14	17.6	16	12.3	19	15	9	1	13
15	16.4	21	11.4	25	17	8	-4	-19
16	15.5	24	10.7	28	17	6	-9	26
17	14.9	26	10.3	28	16	4	-12	-31
18	14.0	28	9.8	27	13	0	-18	-38
19	13.7	29	9.6	27	12	-1	-20	.
20	13.6	29	9.6	27	12	-2	-21	.
21	14.5	27	10.1	28	15	3	-14	33
22	14.1	23	9.8	23	12	0	-16	35
23	13.8	18	9.7	17	9	-2	-17	-35
24	14.8	14	10.4	14	9	1	-12	27

VK WEST - AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	15.5	17	11.6	19	13	5	8	23
2	17.2	15	13.1	15	14	9	0	1
3	19.8	12	15.6	8	13	14	5	-2
4	24.6	11	18.8	1	11	12	10	6
5	26.8	8	19.8	-5	8	11	10	6
6	26.8	7	22.0	-8	5	9	9	6
7	26.5	7	21.7	-10	4	8	8	5
8	26.4	7	21.5	-10	4	8	8	5
9	25.9	7	21.1	-8	5	8	8	4
10	25.2	8	20.5	-5	7	9	8	4
11	24.0	9	19.8	1	10	11	8	3
12	22.4	11	18.0	8	13	12	8	1
13	20.7	14	16.6	16	17	14	7	-2
14	19.0	18	15.2	23	19	13	4	7
15	17.9	22	14.2	29	21	13	1	-12
16	17.0	25	13.4	31	22	12	-1	17
17	16.2	26	13.1	32	20	10	-5	22
18	15.5	28	12.1	32	19	7	-8	-26
19	14.9	29	11.5	31	17	5	-12	-31
20	14.2	30	10.9	30	15	2	-16	-37
21	13.9	30	10.5	29	14	0	-19	.
22	14.7	29	11.0	31	17	4	-13	-32
23	15.2	27	11.4	30	18	7	-9	-26
24	14.7	22	11.1	23	14	3	-11	29

VK EAST - ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	33.6	25	27.8	▒	34	35	33	31
2	34.1	25	28.1	30	▒	35	34	▒
3	33.9	25	27.8	▒	▒	36	34	▒
4	33.5	26	27.5	▒	37	37	35	▒
5	32.9	26	26.9	37	39	38	36	32
6	31.6	28	25.6	42	42	40	37	▒
7	30.1	30	24.4	49	46	43	38	33
8	28.5	31	23.0	51	47	43	37	31
9	24.8	32	21.5	52	47	42	34	29
10	25.2	33	20.1	52	46	41	▒	▒
11	24.4	34	19.4	52	46	40	▒	▒
12	23.6	35	18.6	51	45	39	32	▒
13	22.5	35	17.7	51	44	38	30	20
14	21.2	36	16.9	50	43	36	27	17
15	20.0	37	15.9	49	41	34	24	13
16	18.7	38	14.8	48	▒	31	20	8
17	17.4	39	13.8	46	37	28	16	3
18	17.6	38	13.8	46	37	28	17	4
19	20.4	33	15.8	41	37	31	23	13
20	25.2	29	19.2	37	37	34	29	23
21	29.2	27	22.6	34	37	35	32	28
22	31.0	26	24.4	32	35	35	▒	29
23	31.7	25	25.4	30	34	35	33	29
24	32.7	25	26.2	29	34	35	33	30

VK STH - ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	20.4	14	20.2	19	21	19	12	4
2	24.5	14	20.8	19	22	19	13	5
3	29.6	14	20.6	21	22	20	13	5
4	24.5	15	20.3	23	24	20	14	5
5	26.4	16	20.0	27	26	22	15	6
6	24.0	18	19.4	34	30	24	16	6
7	25.0	20	18.2	39	32	25	15	3
8	21.2	23	16.8	41	32	23	11	-2
9	19.2	25	15.2	39	28	18	4	-11
10	17.3	27	13.7	37	24	12	-4	-23
11	15.7	28	12.4	33	18	3	-16	30
12	14.5	29	11.5	30	13	-3	-25	. .
13	13.6	30	10.8	27	8	-9	-34	. . .
14	12.8	31	10.1	24	4	-15	.	. .
15	12.3	31	9.9	22	0	-20	. .	. .
16	11.8	32	9.2	20	-3	-25	.	. .
17	11.2	32	8.8	17	-8	-32	.	. .
18	10.6	33	8.1	13	-13	-39	. .	. . .
19	11.3	24	8.4	14	-7	-28	. .	. .
20	13.8	19	10.0	17	4	-11	-32	. .
21	17.1	16	13.1	19	14	5	-8	-24
22	20.9	15	16.0	20	19	13	4	-7
23	22.8	14	18.2	19	20	17	10	0
24	23.7	14	19.3	19	21	18	11	3

VK WEST - ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	28.3	11	22.5	3	14	16	14	11
2	28.9	11	23.4	3	13	16	15	11
3	28.9	11	23.5	4	14	16	15	12
4	28.9	12	23.7	6	15	17	16	12
5	28.6	12	23.4	0	8	9	2	2
6	28.4	14	23.2	16	22	21	18	14
7	27.9	16	22.7	24	26	25	20	15
8	26.8	19	21.6	33	31	28	22	15
9	25.0	21	20.1	39	34	29	21	13
10	23.2	23	18.6	41	34	28	19	9
11	21.4	25	17.1	41	33	25	15	4
12	20.4	26	16.2	40	32	23	12	0
13	19.3	27	15.3	40	30	21	9	-4
14	18.3	28	14.5	39	28	18	5	-9
15	17.5	28	13.9	37	26	16	2	-13
16	16.9	29	13.5	37	25	14	0	-17
17	16.1	30	12.4	35	23	11	-4	-21
18	15.4	30	11.7	33	20	8	-8	-24
19	14.9	25	11.3	26	16	5	+0	+28
20	15.8	19	11.8	21	15	6	-6	-21
21	18.3	15	14.4	16	9	10	1	-9
22	22.1	13	16.7	11	16	14	9	1
23	25.5	12	19.6	8	19	16	11	8
24	27.6	11	21.5	3	14	16	14	10

VK EAST - STH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	26.4	6	19.9	-16	0	5	6	4
2	24.1	7	18.2	-7	5	8	6	2
3	2.9	9	16.5	2	9	9	6	0
4	20.0	12	15.0	10	13	10	4	-5
5	18.8	5	14.1	18	16	11	2	-9
6	17.8	19	13.3	24	17	11	0	-13
7	17.0	21	12.9	30	20	11	2	-18
8	16.3	25	12.2	30	19	9	-6	-23
9	5.5	26	11.7	30	18	6	-10	-28
10	14.0	28	10.7	28	13	1	20	.
11	2.3	30	9.4	22	5	-12	-35	.
12	12.0	30	9.2	21	3	-14	38	. .
13	11.0	▒	11.	30	16	4	-13	-33
14	8.4	26	14.2	35	27	18	6	-4
15	16.4	21	12.7	24	18	10	2	16
16	18.8	16	14.5	17	17	13	5	-4
17	17.4	10	13.3	6	9	7	0	10
18	17.4	3	13.2	3	4	3	-1	-9
19	20.1	3	15.1	-12	0	3	1	3
20	24.8	4	18.9	-23	-3	2	4	3
21	28.6	6	22.2	29	6	2	6	6
22	29.0	6	22.6	-31	-7	1	5	6
23	29.4	5	22.4	29	6	2	5	5
24	28.5	5	21.6	24	-3	3	6	5

VK STH - STH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	31.0	8	23.2	-17	1	8	▒	10
2	29.7	10	23.6	7	7	12	13	11
3	27.5	12	21.8	4	14	16	14	11
4	25.3	14	20.1	14	19	18	15	9
5	24.2	17	19.1	23	24	21	16	9
6	23.3	20	18.4	31	28	23	16	8
7	22.1	22	17.6	36	30	24	15	6
8	20.6	24	16.2	37	29	▒	12	1
9	19.3	25	15.1	37	28	20	8	4
10	17.2	27	13.6	35	24	14	1	-14
11	14.9	29	11.6	31	18	5	11	-30
12	14.4	29	11.0	30	16	3	-14	-34
13	16.0	27	12.6	32	20	9	-6	24
14	15.4	23	12.0	26	16	5	-10	27
15	14.8	18	11.4	18	11	1	-13	-29
16	14.0	9	10.7	9	5	2	15	-31
17	13.2	0	10.0	2	1	-5	-17	-32
18	14.1	4	10.6	3	0	-3	-12	-24
19	16.8	-2	13.2	-10	-1	0	-5	-13
20	21.6	1	16.5	-19	-3	1	1	2
21	26.1	4	20.3	27	-6	1	4	3
22	29.0	5	23.0	-30	-7	1	5	5
23	30.1	5	24.4	30	6	2	6	6
24	30.8	6	25.6	-26	-4	4	8	8

VK WEST - STH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	26.4	5	19.8	28	-5	2	5	4
2	23.9	5	18.0	-20	-1	4	5	3
3	21.6	6	16.2	11	2	5	4	0
4	19.5	7	14.6	-2	6	7	3	-3
5	18.7	9	13.6	4	9	8	2	6
6	17.2	13	12.8	11	12	9	0	10
7	16.4	17	12.4	18	15	8	-2	14
8	15.8	21	11.8	23	17	8	-4	-19
9	15.3	26	11.5	28	18	8	-7	-24
10	13.9	29	10.6	28	15	2	-15	-35
11	12.2	31	9.4	24	8	-7	-29	.
12	12.0	32	9.3	25	7	-9	-31	.
13	15.0	30	11.2	32	20	8	-9	-27
14	18.8	28	14.9	38	29	21	10	-2
15	18.0	24	13.9	29	23	17	6	5
16	17.0	19	13.0	20	18	12	3	-8
17	16.7	12	12.9	10	12	8	0	-10
18	15.8	5	12.1	1	6	4	-2	12
19	15.4	2	11.7	-6	2	1	4	4
20	14.2	-4	12.2	12	0	1	2	9
21	18.8	-2	14.8	-21	-4	0	0	-4
22	22.9	.	17.3	-30	-8	0	2	.
23	26.4	4	20.4	36	-0	1	4	4
24	28.4	5	22.6	35	-9	0	5	5

VK EAST - USA/CARRIBBEAN

VK STH - USA/CARRIBBEAN

VK WEST - USA/CARRIBBEAN

APOGEE ARTS

HAMADS

TRADE ADS

● WEATHER FAX programs for IBM XT/ATs. RADFAX $35, is a high resolution shortwave weatherfax, morse & RTTY receiving program. Needs CGA, SSBhf radio & RADFAX decoder. Also RF2HERC, RF2EGA and RG2VGA, same as RADFAX2 but suitable for Hercules, EGA and VGA cards respectively. SATFAX $45, is a NOAA, Meteor and GMS weather satellite picture receiving program. Uses EGA or VGA modes. Needs EGA or VGA colour monitor and card & WEATHER FAX PC card, & 137MHz receiver. All programs are on 5.25" or 3.5" disks (state which) + documentation, add $3 postage. ONLY from Mi Delshunty 42 Villiers St, New Farm Qld 4005. Ph (07) 358 2786.

● BENCHER IAMBIC PADDLES reduced to clear. $170 for the chrome-plated model, limited stocks. Profoto Group, PO Box 501, Fyshwick ACT 2609. Phone (06) 280 4009, fax (06) 280 7250.

FOR SALE — NSW

● YAESU FT101E transceiver, cooling fan, spare finals. KENWOOD AT200 antenna tuner. $800 the lot, no offers. Phil (02) 44 2703.

● YAESU FL2100B linear amp 1200W PEP input, spare tubes, GC, sell for best offer over $800. YAESU FTV650 6m transverter for FT101, 200, 560, 400 etc. Never used, $150. VK2HL (02) 971 9795.

● YAESU FL2100 linear amp, $600. Len VK2BNL (02) 484 2749.

● ICOM IC-32AT HT dual-band 2m/70cm, s/n 03353, incl wall charger plus BP-7 450mAH spare battery. BP-4 battery case, CP-11 cigarette lighter cable, with orig packing, VGC, $475. Edgar VK2RH (045) 67 7800 (BH), (045) 75 1945 (AH).

● KENWOOD TS680S H/F bcvr, mint cond, manual, all access, s/n 909325. Of no further use. Excellent rig, $1500. All VK2UC QTHR (066) 21 5222 PM.

● DECEASED ESTATE: YAESU FT101B transc (c/w mike & earphones). $400; TRIO 9R-59DS rec, $100; YAESU FC-700 antenna tuner $225; EDDYSTONE 770 R/1 rec, $50; DICK SM TH M9548 power supply (0-20v, 0-2amp), $30; 10gHz horn antenna, $20; ESCORT digital EDM168 multimeter, $40; TECH TE15 GDO (transistorised) $80; EA project audio OSC, $20; DICK SMITH Q-1136 multimeter, $30; 3x829 transmitting tubes (with 2x ceramic sockets), $40. Prices ONO. Chris (02) 484 8753. (Transmitting gear to licensed amateurs only).

● 1991 AMATEUR CALLBOOK, International and North American listings, in GC, both volumes $73 incl postage. Steve VK2PS (02) 654 1809.

● KENWOOD TS-120V HF bcvr, VGC, with MC-30 mike, MB-120 mobile mount, $475 ono. Phil VK2NPL (045) 67 7302 AH.

FOR SALE — VIC

● TH3JR HIGAIN antenna, 3-element 10, 15, 20m with balun and connecting coax cable, $250. 50ft two-section crank-up tower with rotator $750. All on site for removal. John not QTHR for VK3NF (03) 802 1849.

● TONO 7000E comms unit for RTTY CW ASCII instr and service manuals and cable, $465 EC. (055) 23 1025.

● YAESU earphones YH-55 impedance 8 ohms, as new cond, Roth VK3BG (03) 725 3550.

● MFJ941D 1.8-30MHz ATU 4-1 balun. Ant switch, EC, $180. HL37V 2M 30w amp, Rx preamp, EC, $150. TRS80 mod 2000 Tandy computer 10mB hard drive, 5.25 floppy, GC, $150. Yaesu YD148 desk mic, GC, $50. Damian VK3EHP QTHR (053) 52 4183.

● COMM RX REALISTIC DX200 1.5-30MHz, $150. Programmable Scanner, REALISTIC PRO2020, $175 (dec'd estate), [illegible] of instruction. Two books & audio tape, $17. VK3AFO QTHR (060) 24 2537.

● FIVE-ELEMENT linear loaded tribander by Werner Wull, $350. DAIWA ant tuner, CNW518. Rated 2.5kW S/N EO8026, $350. Bill (052) 63 2423.

● TRANPRO AUSTRALIA VALVE TESTER type No 862, with sub board in lid with extra sockets. Instr manual, valve charts in GWO, $100. Also TAYLOR VALVE TESTER, Windsor model 45C instr manual, valve charts, in GWO, $120 plus freight. Bill VK3BWS QTHR (052) 29 3337.

● POWER SUPPLY 13.8V 30 Amps at 50%. Heavy duty, weights 16kg. English made, $225. Ron VK3OM QTHR (059) 44 3019.

● KENWOOD R5000 HF communications receiver 10kHz-30MHz, two filters fitted YK88A-1 YK88SN still under warranty, $1420. MONITOR SCOPE YO-100, in as new cond, $310. Harry VK3AXJ QTHR (03) 802 5704.

● The RAAF Williams Amateur Radio Club VK3APP at the Laverton Base will be conducting classes for prospective radio amateurs and those who wish to upgrade their existing qualifications during 1992. The club is planning classes in the following sequence: AOCP/NAOCP morse code; pre-novice theory preparatory course; NAOCP theory; and an AOCP theory course. Enquiries to Mr Neil Trainor (03) 369 1010.

● MFJ 1278 TNC Multimode with greyscale modem and 2400bps board. Incl Multicom s/ware, $550. Damien VK3CDI (054) 27 3042.

● YAESU FT101E mods to RF & PS boards, good finals, manual & cct notes, VGC, S/N 305177, $400. YAESU FT101B (Mk II) complete RX/TX alignment, near-new finals, GC, with manual s/n S10005, $350. Chris VK3JEG QTHR (03) 557 5180 home (03) 660 2977 bus.

● MALDOL HS-200 Power SWR HF/VHF meter 12watt and 120watt ranges, $50. HI-MOUND HK-706 Morse key, $20. Paul VK3EPD (056) 61 1771

● YAESU FT290R 2M all mode base/portable c/w leather carry case, nicads, original packing and manual, as new cond, $480 ono. David VK3DPM (03) 598 1015.

● Yaesu FL2100 HF Linear in new condition. Genuine VIBROPLEX jewelled movement bug key chrome plated, a collector's item. Offers on both of these considered. Don VK3ADI QTHR or BH (03) 882 0020.

FOR SALE - QLD

● REALISTIC AX190 ham band communication receiver SSB & AM, sep speaker, $150. VK4ADS (07) 379 6245.

● YAESU FT290R s/n 2M220355. Nicads charger, soft carry case, $450. WESTERN Peak Power meter, 50 to 150MHz, 5/20/200 watts, $60. OSKER BLOCK RF pwr & SWR meter 420-450MHz 5/25/125 watts, $30. MAST TOP AMP VHF/UHF, $35. Two B&W VIDEO CAMERAS, $30 & $35. G4ENA fast/slow scan converter, all boards assembled, in case, requires leads between panel & boards, $100. Norm VK4ZFO QTHR (077) 79 4641

● CLASS 1.5 (50us) MF105L 100x75mm meters 3 scales, $26. POWER TRANS 240volt-18v @ 25A continuous rating, $25. (25a transistor for use with above, $20). Blower 100mm 240volt fan, $15. ANDREW 44ASW N male connectors, $22. 12v-220v relays, $5 ea. VK4DY QTHR.

● YAESU FT747 s/n 8G070357 YAESU FT757 ATU s/n 9J490001 has 16 months mfr own guarantee, all with manuals. Phone Steve, on (072) 61 1711 from 6-7pm with your offers, please.

FOR SALE — SA

● Y 11/3219 ENGLISH ELECTRIC 4/125A new in cartons, $45 ea. 4/C x 5000, 4CX/3500, 4/CX x 1000, new with sockets, best offer. Also have the above as rebuilt tubes. SWAN ASTRO 150 s/n A150-668, with matching PS, in EC, $800. VK5FR QTHR (082) 95 2331

● YAESU YO-101 monitor scope, $250. AEA CP-1 CW/RRTY/AMTOR computer patch interface, full instructions and software for C64, $250. TONO THETA-8000E ASCII CW RTTY computer, $350. All in VGC. VK5XW QTHR (08) 331 7576.

FOR SALE — WA

● YAESU FT-101Z(D) plus FTV250 and FTV-650B transvertors, $750; KW2000/A U/S $100; DICK SMITH 50mHz counter, $80; LEADER DIPMETER LDM-815, $80; PSUs 2x13.8v, $40 ea. (09) 399 1808.

WANTED — NSW

● YAESU FTV-707 2m transverter module for FTV-707 or FTV-107R.Dan VK2GG QTHR (049) 73 3618.

● CIRCUIT OR DIAGRAM for handheld YAESU FT202, all costs paid. Bruno VK2BPO QTHR (02) 713 1831

● JOB WANTED in Sydney. Two-way radio or anything electronic. Ring Vic VK2EVD (02) 772 2411.

● ICOM R7000 or AR3000, all mode RX or similar to 1.5gHz, any cond. Neville VK2QF QTHR (063) 73 8624, Hargraves, NSW 2850.

● HF TxRx suitable for mobile or portable, with or without AC power supply. TS120S, IC730, FT301 or similar. Details to Roger VK2AIV QTHR (042) 34 1431

WANTED — VIC

● COLLINS KWM2A T/S or latemodel S line equip. Must be in EC, will pay top price. Rob VK3JE (060) 37 1282 OR (03) 584 5739.

● TRANSFORMER 1000V, 300-400ma. Also Electrolytic Capacitors 300-400 volt 200 µf. Damiaw VK3EHP QTHR (053) 52 4183.

WANTED — QLD

● KENWOOD comms rcvr QR666 CCT diagram and op manual. Photocopies OK, will pay costs. VK4DUP QTHR (076) 91 2419.

WANTED — SA

● IC225 2m tcvr, not working, consider any cond. VK5BGZ Keith BH (08) 259 5363, AH (08) 280 7430.

WANTED — WA

● TS430S TXCVR in original cond. Frank VK6ZR QTHR (09) 276 1357

● CIRCUIT DIAGRAM, schematic or photocopy of, IC255A 2m radio, will reimburse any costs. Terry VK6NTJ QTHR.

Kuwait National and Liberation Day Award

On 25 February every year the State of Kuwait used to celebrate its national day. From this year onward the event's name will be National and Liberation Day. To mark this auspicious event, Kuwait Amateur Radio Society is delighted to announce an international contest for Kuwait National and Liberation Day Award. The contest is open to both licensed radio amateurs and SWL, according to the following rules and regulations:

1. Contacts may be conducted on any band and any mode from 3-30MHz.
2. The contest will start at 0000 GMT on 25 February every year and will end at 2400 GMT at the end of February.
3. There will be two callsigns in use: 9K2RA-NL and 9K2..-NL.
4. To quality for the award the contestant is required to secure at least three points by making two calls with KARS station (9K2RA-NL) and one call with any other Kuwaiti amateur station, the call letters of which are added to (9K2..-NL) for instance: 9K2DR-NL.
5. The participant must submit a certified copy of the logbook along with five IRCs or $US3.
6. There is no deadline for submitting applications, which should be addressed to: The Award Manager, Kuwait Amateur Radio Society, PO Box 5240 Safat 13053, Kuwait. Tel: 965 533 3762. Fax: 965 531 1188.

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The "160" Have a Go (again) Activity

Due to multiple requests to "do it again", again, Hastings Branch 13 has set up the following event for your participation. Get a branch group together and borrow a tower or crane, or something at home (an 80m dipole works fine) and come up on 160m. International and national advertising is occurring, so once again good results for your effort are assured.

Previously we have "done it" in October '89 and June '91, so we have chosen March '92 this time to provide variation in time of year (season) and experience. Considerable ZL and VK support was forthcoming last time (without the pressure of a contest, just to "have a go", so join us this time for an exclusive experience.

— 1840 kHz +/-10kHz
— 2000 — 2400+ NZT
— 20 and 21 March 1992
— SSB and CW

73s ZL2BEI (branch callsign)
David Walker ZL3DK

ar

Hamads

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.
*Eight lines per issue free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclose a mailing label from this magazine with your Hamad.
*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.
*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.
*QTHR means address is correct as set out in the WIA current Call Book.

*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.
*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.
Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.
Conditions for commercial advertising are as follows: $25.00 for four lines, plus $2.25 per line (or part thereof) Minimum charge — $25.00 pre—payable.

State: .....

Not for publication: ❑ Miscellaneous ❑ For Sale ❑ Wanted

Name:..... Call Sign: ..... Address: .....

Solution to Morseword No 59

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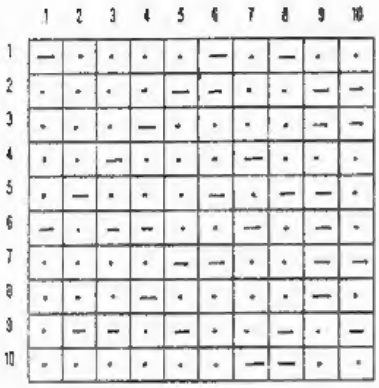

Across: 1 bare; 2 spat; 3 view; 4 idle; 5 lap; 6 year; 7 swim; 8 sneer; 9 waft; 10 siege.
Down: 1 brie; 2 save; 3 vain; 4 fare; 5 like; 6 mints; 7 street; 8 drew; 9 pod; 10 pear

TRADE PRACTICES ACT
It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with **strictly.**

VICTORIAN CONSUMER AFFAIRS ACT
All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the boxholder or seller of the goods.

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The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

ADVERTISERS INDEX FEBRUARY 1992

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Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:.....

.....

Call Sign (if applicable):.....

Address: .....

.....

.....

State and Postcode:.....

WIA Slow Morse Transmissions

VK2BWI nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699kHz and 144.950MHz 5wpm, 8wpm, 12wpm

VK3RCW Continuous on 144.950MHz 5wpm, 10wpm

VK4WIT Monday at 0930 UTC on 3535kHz

VK4WCH Wednesday at 0930 UTC (0830 UTC daylight saving) on 3535kHz

VK4AV Thursday at 0930 UTC on 3535kHz

VK4WIS Sunday at 0930 UTC (0830 UTC daylight saving) on 3535kHz

VK5AWI Nightly at 1030 UTC on 3550 kHz

VK6RAP Nightly at 2000 local on 146.700MHz

VK6WIA Nightly (except Saturday) at 1200 UTC on 3.555MHz

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